Extraterrestrial Life Beyond Earth:

A Comparative and Analytical Study of the Qur'an, Torah, Injeel, Zabur, Sunni and Shia Hadith, and Modern Science.

Authors:

Ali Asgar Pala
Independent Researcher

Mustafa Tin
Independent Co-Researcher

Date: 26 August 2026

Research Type:
Comparative and Interdisciplinary Study

Research Areas:
Comparative Religion • Islamic Studies • Biblical Studies • Astrobiology

Independent Research — Not affiliated with any university, institution, or organization.

© 2026 Ali Asgar Pala and Mustafa Tin. All rights reserved.

This research paper is an original work by the authors. No part of this paper may be reproduced without appropriate acknowledgment of the authors, except for brief quotations used with proper academic citation.

ABSTRACT

The possibility of life beyond Earth is one of the major questions explored in modern astronomy, astrobiology, philosophy, and religious thought. This study examines the concept of extraterrestrial life through a comparative and interdisciplinary analysis of the Qur'an, Torah, Injeel, Zabur, Sunni and Shia Hadith literature, and modern scientific research. It focuses on verses and religious texts that discuss heavens, the Earth, living creatures, multiple realms, and other concepts that may be related to the possibility of life beyond Earth. The study also examines traditions related to the "seven earths" and other descriptions of the universe.

The research also looks at modern scientific ideas about extraterrestrial life, including exoplanets, habitable environments, biosignatures, the search for microbial life, and the possibility of intelligent civilizations. It separates what religious texts directly say from later interpretations, scientific evidence, and theoretical ideas. The study does not claim that religious texts scientifically prove the existence of extraterrestrial life. Instead, it explores whether these texts can be understood as being compatible with the possibility of life beyond Earth.

The study examines whether science has not yet confirmed extraterrestrial life; some religious texts and interpretations may allow for the possibility of life beyond Earth. The research aims to encourage a careful discussion between religion and modern science.

Note on Religious Texts: This research contains verses, passages, and references from religious and sacred texts, including the holy Qur'an, Torah, Injeel, Zabur, and Islamic Hadith literature. These texts are included for academic study, comparison, and discussion. Readers are kindly requested to approach these passages with respect and sensitivity toward the religious beliefs and traditions associated with them. The inclusion of any verse or religious report in this research is intended for scholarly examination and should not be understood as disrespect or criticism of the faith or its followers.

Note: As this research involves the study and comparison of religious texts, translations, interpretations, historical sources, Hadith reports, and scientific literature, some limitations or differences in interpretation may remain. These findings should therefore be considered open to further review and discussion.

For suggestions, corrections, or academic feedback regarding this research, please contact the corresponding author:

Email: aliasgarpala11@gmail.com

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

INTRODUCTION

The question of whether life exists beyond Earth has been a subject of human curiosity for centuries. As our understanding of the universe has developed, this question has moved from philosophy and religious thought into the fields of astronomy, astrobiology, and planetary science. Modern observations have shown that the universe contains billions of galaxies and a vast number of stars, many of which have planetary systems. The discovery of thousands of exoplanets has further increased scientific interest in whether some environments beyond Earth could support life. Examples such as **Proxima Centauri b, Kepler-186f, and the TRAPPIST-1 planetary system** have become important objects of scientific interest because of their planetary characteristics and potential habitability. However, the presence of a potentially habitable environment does not by itself prove that life exists there.

The search for extraterrestrial life is not limited to modern science. Religious and philosophical traditions have also discussed the vastness of creation, the heavens, the Earth, living creatures, and different realms of existence. The Qur'an contains several passages concerning the heavens and the Earth and mentions creatures associated with them. Islamic hadith literature also contains reports concerning cosmological concepts such as the "seven earths." Similarly, the Torah, Injeel (the Gospel revealed to Jesus), and Zabur (traditionally associated with the Psalms) contain descriptions of creation, the heavens, and the wider universe. However, the interpretation of these texts varies, and they should not automatically be treated as direct scientific statements about extraterrestrial life.

This research therefore examines the possibility of extraterrestrial life from both religious and scientific perspectives. It compares relevant passages from the Qur'an, Torah, Injeel, and Zabur with Sunni and Shia hadith literature and considers relevant interpretations by scholars. Alongside these sources, the study examines modern scientific research concerning exoplanets, habitable environments, biosignatures, microbial life, and the possibility of intelligent civilizations.

Because this subject combines religion, history, philosophy, and science, it is important to clearly separate evidence from interpretation. The study therefore approaches the subject comparatively and attempts to present both the possibilities and the limitations of the available evidence.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

Research Methodology

This research uses a comparative and interdisciplinary approach to examine the possibility of extraterrestrial life from religious and scientific perspectives. The study brings together material from religious texts, Islamic hadith literature, scholarly interpretations, and modern scientific research. The purpose of this approach is to compare different sources while keeping their historical, religious, and scientific contexts in consideration.

1. Primary Sources

The primary religious sources examined in this study include the Qur'an, the Torah, the Injeel, and the Zabur. Relevant passages concerning heavens, the Earth, creation, living creatures, and different realms of existence are identified and studied in their textual context. Sunni and Shia hadith collections are also examined, particularly reports related to cosmology, the "seven earths," and possible references to other forms of creation or worlds.

2. Scholarly and Religious Interpretations

The study considers interpretations from classical and modern scholars relevant. For the Sunni tradition, examples include al-Tabari, Ibn Kathir, al-Razi, and al-Qurtubi, whose works are important sources of Qur'anic interpretation. For the Shia tradition, the study refers to scholars such as al-Tusi, al-Tabrizi, Muhammad Husayn Tabataba'i, Imam Ja'far al-Sadiq a.s and Imam Muhammad al-Baqir a.s.

The study also examines relevant reports attributed to the Imams of the Ahl al-Bayt (the family of the Prophet Muhammad peace be upon him), particularly Imam Ja'far al-Sadiq (a.s.) and Imam Muhammad al-Baqir (a.s.), where their narrations discuss multiple worlds, creations, and cosmological concepts. For example, a report attributed to Imam Ja'far al-Sadiq a.s describes twelve thousand worlds, while another report attributed to Imam Muhammad al-Baqir a.s refers to seven groups or worlds created on Earth before Adam. These reports are examined according to their original sources, context, and scholarly assessment rather than being treated automatically as scientific evidence.

These interpretations and reports are used to understand how ideas about creation, different worlds, and the wider universe have been discussed within Islamic thought. Differences between scholarly opinions and the status of individual reports are noted rather than treating one interpretation as universally accepted.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

3. Scientific Sources

The scientific part of the research examines modern work in astronomy, astrobiology, planetary science, and cosmology. Topics include exoplanets, habitable environments, biosignatures, the search for microbial life, and the possibility of intelligent life beyond Earth. Scientific information is considered according to available observations, research findings, and established scientific understanding.

4. Comparative Analysis

The information collected from religious and scientific sources is compared according to its type and level of evidence. The study distinguishes between what a religious text directly states, how scholars interpret it, what scientific observations show, and what remains theoretical or speculative. Similarities are not treated as proof of a connection unless sufficient evidence supports such a conclusion.

5. Limitations

This research has some limitations. Religious texts can have different translations and interpretations, and some historical reports and Hadith may have different levels of authenticity or scholarly acceptance. In addition, modern science has not yet confirmed the existence of extraterrestrial life. Some ideas discussed in this research, such as other worlds, multiple universes, or life beyond Earth, may remain theoretical or open to interpretation. Therefore, the study presents such ideas carefully and does not treat possibilities or interpretations as confirmed facts.

6. Source Evaluation

Sources are evaluated according to their type, context, and reliability. Religious texts, Hadith reports, scholarly interpretations, and scientific findings are considered according to their own standards. Where different interpretations or uncertainties exist, they are clearly mentioned rather than presenting one view as certain. Religious claims are examined in their historical and textual context, while scientific claims are compared with current scientific understanding and available evidence. This helps the research maintain a balanced approach and avoid treating religious interpretation, historical reports, and scientific theories as the same type of evidence.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

1. EXTRATERRESTRIAL LIFE IN THE QUR'AN

1.1. Creation of the Heavens and the Earth

The Qur'an frequently draws attention to the creation of the heavens and the Earth and presents them as part of a vast and ordered creation. It encourages human beings to observe the world around them and reflect on the signs found in creation. The heavens are mentioned repeatedly alongside the Earth, showing that the Qur'anic view of creation extends far beyond the human environment.

Several Qur'anic passages describe the creation and structure of the heavens and the Earth. For example, the Qur'an refers to the creation of the heavens and the Earth as signs for those who reflect and seek understanding. It also describes the heavens and the Earth as part of a wider creation established by God. These descriptions show that the Qur'anic view of existence is not limited to the Earth alone but includes a much larger cosmic order.

The Qur'an contains several verses that invite reflection on the creation of the heavens and the Earth. For example, Qur'an 3:190 describes the creation of the heavens and the Earth and the alternation of night and day as signs for people who reflect. Qur'an 21:30 refers to the heavens and the Earth as once being joined before being separated, while Qur'an 51:47 describes the heaven as being built with power and its vastness or expansion according to different translations. These verses have been discussed by Muslim scholars in different ways and should be understood within their religious and linguistic context. They provide an important foundation for studying the Qur'anic view of the universe, although they do not by themselves establish the existence of extraterrestrial life.

1.2. Creatures in the Heavens and the Earth

One of the most relevant Qur'anic passages for the discussion of life beyond Earth is Qur'an 42:29. The verse draws attention to the creation of heavens and the Earth and mentions the living creatures that have been spread throughout them. This wording is important because it connects the idea of living creatures not only with the Earth but also with heaven. However, the verse does not specifically use the modern concept of "extraterrestrial life" or describe such beings in scientific terms. Therefore, its meaning needs to be examined through its Arabic wording, context, and interpretations by Muslim scholars.

Qur'an 42:29 states that among the signs of God is the creation of the heavens and the Earth and the living creatures that He has spread throughout them. The verse uses the expression "whatever

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

creatures He has spread in them," which has attracted attention in discussions about whether life may exist beyond Earth. The reference to creatures in connection with both heavens and the Earth is particularly important for this study. However, the verse itself does not explain what these creatures are, where they exist, or whether they are like life on Earth. Therefore, wording can support a discussion about the possibility of life beyond Earth, but it should not be presented as direct proof of extraterrestrial life.

The Arabic word used in this verse for "creatures" is **Dabbah (.(دَابَّة "**The word generally refers to a living creature or a creature that moves upon the earth In the Qur'an, the term is used for living creatures and is not restricted to humans. Therefore, its use in Qur'an 42:29 does not by itself identify the nature or form of the creatures mentioned in the heavens and the Earth. This leaves room for different interpretations, including the possibility that the verse refers to forms of life that are not known to human beings. However, such an interpretation remains a possibility rather than a confirmed answer.

Reference A: Qur'an, Surah Ash-Shura (42:29)

Arabic:

ۚ وَمِنْ آيَاتِهِ خَلْقُ السَّمَاوَاتِ وَالْأَرْضِ وَمَا بَثَّ فِيهِمَا مِنْ دَابَّةٍ ۚ وَهُوَ عَلَىٰ جَمْعِهِمْ إِذَا يَشَاءُ قَدِير

Roman transliteration:

Wa-min āyātihi khalqus-samāwāti wal-arḍi wa-mā baththa fīhimā min dābbah; wa-huwa ʿalā jamʿihim idhā yashāʾu qadīr.

English Meaning:

"And among His signs is the creation of the heavens and the Earth, and whatever living creatures He has spread in both. And He is capable of gathering them all together whenever He wills."

Linguistic Significance of Key Terms

The expression **"fīhimā" (فِيهِمَا)** in Qur'an 42:29 is important for understanding the verse. The word *fīhimā* means **"in them"** or **"in both."** It refers to the two things mentioned immediately before it: **heaven and the Earth**. The verse therefore mentions living creatures in connection with both heaven and the Earth. However, the verse does not explain where these creatures live or what kind of creatures they are.

Another important word is **"dābbah" (.(دَابَّةٍ** It generally refers to a **living or moving creature**. The word is used in different contexts in the Qur'an and is not limited only to human beings.

Because of this, translators may use different words such as "creatures," "living creatures," or "moving creatures."

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

These two terms are significant for this study because they raise an important question about the scope of the creatures mentioned in the verse. The wording leaves room for further examination of whether the reference to creatures in the heavens could include forms of life beyond Earth. This question can then be explored through classical Islamic interpretations, other Islamic sources, and modern scientific perspectives.

==========

Reference B: Qur'an - Surah An-Nahl (16:49)

Arabic:

وَلِلَّهِ يَسْجُدُ مَا فِي السَّمَاوَاتِ وَمَا فِي الْأَرْضِ مِنْ دَابَّةٍ وَالْمَلَائِكَةُ وَهُمْ لَا يَسْتَكْبِرُونَ

Roman Transliteration:

Wa lillahi yasjudu ma fis-samawati wa ma fil-ardi min dābbatin wal-malā'ikatu wa hum la yastakbirun.

English Meaning:

"And to Allah bows down whatever is in the heavens and whatever creatures are on the Earth, along with the angels, and they are not arrogant.

Relevance to the Study: Qur'an 16:49 also mentions what is in the heavens and refers specifically to creatures on the Earth. Unlike Qur'an 42:29, its wording does not directly state that creatures exist in the heavens. Therefore, the verse is treated as a supporting passage rather than direct evidence for life beyond Earth. It also mentions the angels separately as another form of creation. The verse therefore provides another example of how the Qur'an describes different forms of creation in relation to the heavens and the Earth. Its wording and grammatical structure can be examined further when considering the wider Qur'anic view of life and creation beyond Earth.

==========

Reference C: Qur'an - Surah At-Talaq (65:12)

Arabic:

اللَّهُ الَّذِي خَلَقَ سَبْعَ سَمَاوَاتٍ وَمِنَ الْأَرْضِ مِثْلَهُنَّ يَتَنَزَّلُ الْأَمْرُ بَيْنَهُنَّ لِتَعْلَمُوا أَنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ وَأَنَّ اللَّهَ قَدْ أَحَاطَ بِكُلِّ شَيْءٍ عِلْمًا

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

Roman Transliteration:
Allāhu alladhī khalaqa sabʿa samāwātin wa-mina al-arḍi mithlahunna yatanazzalu al-amru baynahunna li-taʿlamū anna Allāha ʿalā kulli shayʾin qadīrun wa-anna Allāha qad aḥāṭa bi-kulli shayʾin ʿilmā.

English Meaning:
"Allah is the One who created seven heavens, and of the Earth the like of them. His command descends between them, so that you may know that Allah has power over all things and that His knowledge encompasses everything."

Relevance to the Study:

This verse is important because it describes **seven heavens** and mentions the Earth in relation to them. The phrase **"of the Earth the like of them"** has been understood in different ways by Muslim scholars. Some interpretations discuss multiple earths, while others understand the wording differently. Because of these differences, the verse therefore provides an important basis for examining the Qur'anic description of the heavens and the Earth and how these descriptions have been understood in Islamic scholarship.

==========

Reference D: Qur'an - Surah An-Nur (24:45)

Arabic:
وَاللَّهُ خَلَقَ كُلَّ دَابَّةٍ مِنْ مَاءٍ ۖ فَمِنْهُمْ مَنْ يَمْشِي عَلَىٰ بَطْنِهِ وَمِنْهُمْ مَنْ يَمْشِي عَلَىٰ رِجْلَيْنِ وَمِنْهُمْ مَنْ يَمْشِي عَلَىٰ أَرْبَعٍ ۚ يَخْلُقُ اللَّهُ مَا يَشَاءُ ۚ إِنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِير

Roman Transliteration:
Wallāhu khalaqa kulla dābbatin min mā'in, fa-minhum man yamshī ʿalā baṭnihi wa-minhum man yamshī ʿalā rijlayni wa-minhum man yamshī ʿalā arbaʿ; yakhluqu Allāhu mā yashāʾ; inna Allāha ʿalā kulli shayʾin qadīr.

English Meaning:
"Allah created every living creature from water. Some of them move on their bellies, some move on two legs, and some move on four. Allah creates whatever He wills. Surely Allah has power over all things."

Relevance to the Study:

This verse gives another example of how the Qur'an describes the diversity of living creatures and connects life with water. It also emphasizes that God creates living beings in different forms. These ideas are relevant to the broader question of biological diversity and the possibility that

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

life, if discovered beyond Earth, may differ from life known on Earth. The verse therefore provides a broader perspective on the diversity of creation.

==========

Summary of Relevant Qur'anic Passages

The verses examined in this section present a broad picture of creation, the heavens, the Earth, and living creatures. Qur'an 42:29 is particularly important because it mentions creatures in connection with both the heavens and the Earth. Qur'an 16:49 provides another reference to the heavens and creatures on the Earth, while Qur'an 65:12 describes seven heavens and mentions the Earth in relation to them. Qur'an 21:30 and 24:45 connect living creation with water and show the variety of living creatures. Together, these verses provide several points for studying how the Qur'an describes the wider creation and the possibility of forms of life beyond the human world. Their meanings and significance can be examined further through Qur'anic language, historical context, and interpretations found in Islamic scholarship.

1.3. Interpretations of Creation Beyond Earth

The Qur'anic passages discussed above raise important questions about the nature and extent of creation beyond the Earth. Their descriptions of heavens, the Earth, and living creatures provide a broader framework for examining whether creation may extend beyond the human world. Their wording allows different levels of interpretation, depending on the language, context, and understanding of the scholars who have studied them. Some passages describe heavens and the Earth together, while others refer to living creatures or different forms of creation. These descriptions can therefore be examined as part of the Qur'an's broader view of a creation that is not limited to the human world.

1.4. Classical Islamic Scholarship and the Meaning of Creation

Classical Islamic scholarship provides an important perspective for understanding Qur'anic descriptions of the heavens, the Earth, and creation. Muslim scholars examined these verses

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

through Arabic language, Qur'anic context, and wider theological discussions about the nature of creation. Their interpretations show that the Qur'anic description of the universe was understood as broader than the immediate human environment. Discussions concerning multiple heavens, different realms of creation, and creatures beyond the human world appear in various strands of Islamic thought. These interpretations are important for this study because they provide a historical framework for examining how the possibility of creation beyond the Earth has been understood within Islam.

1.5. Classical Interpretation of Qur'an 42:29

Classical Qur'anic interpretation shows that Muslim scholars did not always understand Qur'an 42:29 in exactly the same way. Al-Tabari, in his *Tafsir*, Explains the phrase "what He has dispersed in both" by referring to creatures in the heavens and the Earth, while citing Mujahid's interpretation that the creatures include humans and angels. Al-Qurtubi also discusses different interpretations of the verse. He records the view that the creatures mentioned may include angels and humans, while also mentioning an alternative interpretation in which the reference is understood as applying specifically to the Earth.

1.6. Al-Alusi and the Interpretation of Qur'an 42:29

The interpretation of Al-Alusi is also relevant to the discussion of Qur'an 42:29. In his *Ruh al-Ma'ani*, Al-Alusi discusses the possibility that the creatures mentioned in the verse may include beings associated with the heavens. His discussion shows that the wording of the verse was considered broad enough to allow more than one interpretation. This is important for the present study because it shows that the possibility of creation beyond the Earth was not necessarily limited to modern discussions. Al-Alusi's interpretation can therefore be examined as part of the wider history of Islamic thought concerning the nature and extent of creation.

- The interpretations discussed above show that Qur'an 42:29 has been understood in more than one way within Islamic scholarship. Al-Tabari and Al-Qurtubi record different explanations of the creatures mentioned in the verse, while Al-Alusi's discussion gives further attention to the possibility of creatures associated with heaven. These differences show that the meaning of the verse has been approached through different linguistic and theological perspectives. For this study, these interpretations provide an important historical background for examining the idea of creation beyond Earth.

1.7. The Seven Heavens

The concept of seven heavens appears repeatedly in the Qur'an and forms an important part of its description of creation. The Qur'an refers to seven heavens in several passages and describes

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

them as part of a structured and ordered creation. These references appear in different contexts, including the creation of the heavens, their arrangement, and the signs found within them. Studying these passages together can help us understand how the Qur'an presents the structure of the universe and the relationship between the heavens and the Earth.

Reference E: <u>Qur'an - Surah Fussilat (41:12)</u>

Arabic:

فَقَضَاهُنَّ سَبْعَ سَمَاوَاتٍ فِي يَوْمَيْنِ وَأَوْحَىٰ فِي كُلِّ سَمَاءٍ أَمْرَهَا ۚ وَزَيَّنَّا السَّمَاءَ الدُّنْيَا بِمَصَابِيحَ وَحِفْظًا ۚ ذَٰلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ

Roman Transliteration:

Faqaḍāhunna sabʿa samāwātin fī yawmayni wa-awḥā fī kulli samāʾin amrahā; wa-zayyannā as-samāʾa ad-dunyā bi-maṣābīḥa wa-ḥifẓā; dhālika taqdīru al-ʿazīzi al-ʿalīm.

English Meaning:

"So He completed them as seven heavens in two days and assigned to each heaven its command. And We adorned the nearest heaven with lamps and made it protected. This is the design of the Almighty, the All-Knowing."

Relevance to the Study:

This verse is important because it presents the heavens as <u>seven in number</u> and describes each heaven as having its own assigned order or function. It also refers to the nearest heaven as being adorned with lamps, providing an additional description of the structure of the heavens. These details are important when examining how the Qur'an presents the organization and nature of the heavens.

Reference F: <u>Qur'an - Surah Al Mulk (67:3)</u>

Arabic:

الَّذِي خَلَقَ سَبْعَ سَمَاوَاتٍ طِبَاقًا ۖ مَا تَرَىٰ فِي خَلْقِ الرَّحْمَٰنِ مِنْ تَفَاوُتٍ ۖ فَارْجِعِ الْبَصَرَ هَلْ تَرَىٰ مِنْ فُطُورٍ

Roman Transliteration:

Alladhī khalaqa sabʿa samāwātin ṭibāqan; mā tarā fī khalqi ar-Raḥmāni min tafāwut; farjiʿi al-baṣara hal tarā min fuṭūr.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

English Meaning:

"He is the One who created seven heavens, one above another. You will not see any inconsistency in the creation of the Most Merciful. Look again: do you see any flaw?"

Relevance to the Study:

This verse gives another description of the seven heavens, using the word **"tibaqan,"** which is commonly understood as being in layers, levels, or one above another. It presents heaven as an ordered and structured part of creation. This wording is relevant when examining different interpretations of the relationship and arrangement of the seven heavens.

Comparison of Qur'anic Descriptions

Qur'an 67:3 describes the seven heavens as *ṭibāqan*, a term commonly understood as being arranged one above another or in successive levels. A similar description is found in Qur'an 71:15, where the seven heavens are also described as being one above another. The use of similar wording in different passages shows that the arrangement of the seven heavens is an important part of the Qur'anic description of creation. These verses present the heavens as an ordered and structured part of the universe, while leaving their exact nature and arrangement open to interpretation. This has led Muslim scholars to discuss whether the seven heavens should be understood as physical levels, distinct realms, or in another manner.

Reference**:** Qur'an, Surah Nuh (71:15).

==========

1.8. The Lowest Heaven and the Stars

Qur'an 67:5 describes the lowest heaven as being adorned with "lamps" and mentions their role in the context of the devils. This connects with **Qur'an 41:12**, which also describes the nearest heaven as being adorned with lamps. Together, these verses provide a further description of the nearest heaven and its connection with the visible celestial creation. The repeated reference to the lowest or nearest heaven is relevant to understanding how the Qur'an presents the structure and appearance of the heavens. **(Qur'an 67:5; Qur'an 41:12).**

1.9. Understanding the Seven Heavens

The Qur'anic references discussed above present the seven heavens as an important part of the structure of creation. They are described as seven in number, arranged in an ordered manner, and connected with the nearest heaven through references to lamps or celestial objects. The repeated mention of the seven heavens in different passages

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

suggests that they represent a meaningful part of the Qur'anic description of the cosmos. However, the exact nature of these heavens has been understood in different ways within Islamic scholarship. They may be discussed as distinct realms, levels of creation, or in other ways depending on the interpretation. For this research, these different possibilities are considered when examining whether the Qur'anic description of the heavens can be related to broader questions about the structure and extent of the universe.

References: Qur'an 41:12, 67:3, 67:5, 71:15.

==========

1.10. The Seven Earths

The Qur'an also contains a reference that connects the Earth with the concept of seven heavens. In Qur'an 65:12, Allah is described as the One who created seven heavens and **"of the Earth, the like of them."** This phrase has attracted attention because it may suggest a relationship between the seven heavens and multiple forms or levels of the Earth. The exact meaning of this expression has been understood in different ways by Muslim scholars, making it an important subject for further examination.

Linguistic Meaning of "Mithlahunna"

The Arabic phrase **"wa-mina al-arḍi mithlahunna" (وَمِنَ الْأَرْضِ مِثْلَهُن)** can be understood as **"and of the Earth, the like of them."** The word *mithl* generally carries the meaning of "like," "similar," or "comparable," while the ending *-hunna* refers back to the feminine plural mentioned earlier, in this context the seven heavens. Because of this wording, the phrase has been understood as indicating some form of similarity or correspondence between heavens and the Earth. The verse itself does not explain in detail what this similarity means, which has led to different interpretations within Islamic scholarship.

Reference: Qur'an, Surah At-Talaq (65:12).

1.11. Scholarly Views on the Seven Earths

Classical Qur'anic commentaries give more specific interpretations of the phrase *"and of the Earth, the like of them"* in Qur'an 65:12. Al-Tabari records the interpretation that there are seven earths, corresponding in number to the seven heavens. Ibn Kathir also presents the concept of

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

seven earths in his commentary while discussing related Qur'anic and traditional interpretations. These explanations are important because they show that the phrase was understood by some major commentators referring to more than one Earth, rather than simply describing the Earth as a single geographical body.

1.12. Possible Meanings of the Seven Earths

The expression "the like of them" in Qur'an 65:12 can be understood in several ways. One possibility is that it refers to multiple Earths or Earth-like realms, each having some form of relationship with the seven heavens. Another possibility is that the expression refers to different levels or regions of creation rather than separate physical planets. A further interpretation is that the exact nature of these Earths is beyond what can be determined from the verse alone. These possibilities show why the phrase has remained an interesting subject in Qur'anic interpretation. From the perspective of this research, the idea is particularly relevant because modern astronomy has also established that Earth-like planets exist outside our Solar System, although their similarity to Earth does not by itself establish that they are the "seven Earths" mentioned in the Qur'an.

The discussion of the seven Earths adds another dimension to the Qur'anic description of creation. Along with the references to the seven heavens and creatures associated with heavens and Earth, it presents a picture of creation that is broader than the human world alone. The exact meaning of the seven Earths remains a matter of interpretation, but the concept provides an important historical and theological perspective for a study of worlds and life beyond Earth.

1.13. Understanding Creation Beyond Earth in the Qur'an

The Qur'anic passages discussed in this section present a broad view of creation that includes the heavens, the Earth, and living creatures. References such as Qur'an 42:29, 65:12, and other related verses provide a basis for examining creation beyond the human world. Together, these passages offer an important religious perspective for considering the possibility of life or other forms of creation beyond Earth. Their language and interpretations also show that the Qur'anic description of creation extends beyond what can be directly observed from the human environment. These ideas provide a useful foundation for comparing the Qur'anic perspective with other religious traditions and modern scientific understanding.

---

2. Extraterrestrial Life in the Injeel and Christian Biblical Tradition

2.1. Introduction and Textual Context

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

The Christian biblical tradition contains many passages about creation, the heavens, the Earth, living beings, and the wider universe. These texts were written in different historical periods and within different religious and cultural settings. Although they are not scientific texts, some of their descriptions can be examined in relation to the broader question of whether life or other forms of creation may exist beyond Earth. This section examines relevant Biblical passages in their textual and historical context and considers how Christian scholars have understood them. The purpose is to examine what these texts and their interpretations present, while allowing the evidence to guide the discussion.

2.2. Creation and the Universe

The Bible begins with an account of creation in which God creates the heavens and the Earth. The opening of Genesis presents the universe as a creation of God and describes the development of the Earth, the sky, living creatures, and humanity. This provides the basic biblical framework for understanding the relationship between the Earth and the wider creation. For this research, the creation account is relevant because it establishes that the biblical view of existence extends beyond the human world to the heavens and the wider created order. **(Genesis 1:1–31).**

2.3. Creation and Diversity of Living Creatures

Genesis 1:20–25 describes God creating living creatures in different environments, including creatures of the sea, birds of the air, and animals of the land. The passage presents life as diverse and spread across different parts of the created world. While its focus is on life within the Earth, this description is relevant to the wider question of how the biblical tradition understands the diversity and extent of living creation. It provides a useful background for considering whether creation, in a broader sense, may include forms of life beyond the human world. **(Genesis 1:20–25)**

2.4. Creation Beyond the Visible World

Colossians 1:16 presents creation as extending beyond the visible world, stating that all things were created “in heaven and on earth,” including things that are visible and invisible. It also refers to different forms of powers and authorities within this wider creation. The passage is relevant to this study because it presents existence as broader than what can be directly observed, while also distinguishing between visible and invisible aspects of creation. However, the passage does not specifically identify other planets or biological life beyond Earth, so its relevance lies mainly in its broader description of the scope of creation. **(Colossians 1:16).**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

2.5. The Universe and the Unseen

Hebrews 11:3 states that, by faith, the worlds or universe were formed by the word of God, and that what is visible did not originate from what was visible. The Greek term *aiōnes* has been translated in different ways, including "worlds," "ages," and "universe," depending on the translation and interpretation. This passage is relevant because it presents creation as extending beyond what is immediately visible and describes the visible world in relation to a wider, unseen reality. **(Hebrews 11:3)**

2.6. Heavenly and Earthly Bodies

1 Corinthians 15:40–41 distinguishes between heavenly bodies and earthly bodies and then describes the different glory of the sun, moon, and stars. The passage is especially relevant because it presents the heavenly and earthly realms containing different forms of "bodies" and emphasizes that they are not identical in their nature or glory. Christian commentators have interpreted the expression "heavenly bodies" in different ways, with some understanding it primarily as celestial objects and others considering a connection with heavenly beings. This makes the passage relevant to the study of whether the biblical tradition allows for forms of existence beyond ordinary earthly life, while its immediate context remains the discussion of resurrection. **(1 Corinthians 15:40–41)**

2.7. Christian Scholarly Interpretations

Christian theologians have also considered how the discovery of life beyond Earth could relate to Christian theology. **Ted Peters**, a Christian theologian and scholar of science and religion, has developed the field of *Astrotheology*, which examines the relationship between space science and Christian theological ideas. He argues that the discovery of extraterrestrial intelligent life would raise important theological questions, particularly about the scope of God's creation and the meaning of Christ's incarnation and redemption. Peters has also argued that the possible discovery of extraterrestrial life would not necessarily lead to a collapse of Christian faith but would require Christian theology to think more deeply about humanity's place within a much larger universe **(Peters, 2016).**

Christopher Baglow and the Possibility of Extraterrestrial Life

Christopher Baglow, a Catholic theologian, has also examined how Christian theology might respond to the discovery of intelligent life beyond Earth. His discussion considers questions such as whether extraterrestrial beings would be part of God's creation and how Christian ideas about

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

sin, redemption, and the Incarnation might relate to beings unlike humanity. His approach treats these questions as theological possibilities rather than established facts. This perspective is useful for the present study because it shows how Christian theology can engage with the possibility of extraterrestrial intelligence while remaining within its own theological framework. **(Baglow, 2022).**

Brother Guy Consolmagnan, astronomer and director of the Vatican Observatory, has also discussed the possibility of intelligent life elsewhere in the universe from a Catholic perspective. His work considers how the discovery of extraterrestrial life could be understood within Christian theology and how such a discovery might expand humanity's understanding of creation **(Consolmagno, 2005).**

2.8. Overall, Christian Biblical Perspective

The Christian biblical tradition presents creation as extending beyond the human world and describes the heavens, the Earth, living creatures, and forms of existence that are not always directly visible to humanity. The passages examined in this section primarily discuss creation, heavenly and earthly existence, and the relationship between the visible and unseen realms rather than explicitly describing life on other planets. Nevertheless, these descriptions provide a broader theological framework within which the possibility of life beyond Earth can be considered. Christian theological scholarship has further explored how the discovery of extraterrestrial life, particularly intelligent life, could raise questions about the scope of God's creation, the place and uniqueness of humanity, and theological concepts such as incarnation and redemption. These discussions demonstrate that the possibility of extraterrestrial life can be meaningfully examined within Christian thought without presenting biblical passages as scientific evidence for its existence. At the same time, interpretations of these passages can vary according to theological tradition, historical context, and the understanding of individual scholars. Overall, the Christian biblical tradition offers a broad theological perspective on creation and the universe, while the question of whether life actually exists beyond Earth remains open to scientific investigation. Future discoveries in astronomy and astrobiology may provide new information that could contribute to how this question is understood in both scientific and theological discussions.

---

3. Extraterrestrial Life in the Torah

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

3.1. Introduction and Textual Context

The Torah, the foundational collection of Jewish scripture, contains accounts concerning creation, the heavens, the Earth, and the diversity of living beings. Its creation narratives provide an important historical and theological framework for understanding how the universe and life are described within the Jewish tradition. Unlike modern scientific literature, the Torah does not discuss extraterrestrial life as a scientific question; however, its descriptions of the heavens, creation, and the wider order of existence provide relevant material for examining how the possibility of life beyond Earth may be considered within a broader religious context. This section therefore examines selected passages from the Torah and considers their relevance through their textual meaning, historical context, and Jewish scholarly interpretation, without assuming that religious descriptions directly correspond to modern scientific concepts.

3.2. Creation of the Heavens and the Earth

The Torah begins its account of creation with the statement that God created the heavens and the Earth. In **Genesis 1:1**, heavens and the Earth are presented as the beginning of the created order. The following part of the chapter describes how the Earth is gradually organized, including the separation of light and darkness, the formation of the sky and seas, and the appearance of vegetation and living creatures. The creation account therefore presents the universe as an ordered system in which different parts of creation have their own place and function. The heavens are presented as part of this wider creation rather than as an isolated concept separate from the Earth.

The creation of the Sun, Moon, and stars is also described as part of this ordered structure. **Genesis 1:14–18** states that the lights in the heavens were created to mark days, seasons, and years. The account then describes the creation of living creatures in the waters, birds in the sky, and animals on the land **(Genesis 1:20–25)**. This sequence presents the heavens, Earth, and living creation as interconnected parts of the larger created order. For the present study, these passages provide a foundation for examining how the Torah understands the extent and diversity of creation and whether its broader description can contribute to discussions about life beyond Earth. **References:** Genesis 1:1–25.

3.3. The Heavens and the Celestial Order

The Torah describes the heavens as an important part of the created order. In **Genesis 1:14–18**, the lights placed in the heavens are described as serving specific purposes, including marking seasons, days, and years. The passage mentions the greater light, the lesser light, and the stars,

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

presenting the celestial realm as an organized part of creation. This description is relevant to the present study because it shows how the Torah places the Earth within a larger cosmic order rather than describing it in isolation. The mention of numerous stars also provides a broader context for considering the scale of creation and the possibility that the universe may contain more than what is directly experienced by humanity. **(Genesis 1:14–18)**

3.4. Jewish Interpretations of Creation Beyond Earth

Jewish thought has developed a range of discussions about the extent of creation and the possibility of life or other forms of existence beyond the human world. The Torah itself does not provide a detailed account of life on other planets, but its broader descriptions of creation, the heavens, and different forms of existence have provided a foundation for later theological discussion. Jewish scholars and thinkers have considered questions about the vastness of the universe, heavenly beings, and whether God's creative activity should be understood as limited to the world known to humanity. These discussions are important for the present study because they show that the question of creation beyond Earth can be examined within Jewish thought without assuming that every reference to the heavens represents extraterrestrial life.

In modern Jewish thought, the possibility of discovering life elsewhere in the universe has also been considered in relation to ideas about God's creation and humanity's place within it. Some thinkers have argued that the discovery of extraterrestrial life would not necessarily conflict with Jewish theology, while others have focused on the philosophical and theological questions such a discovery could raise. These different approaches demonstrate that Jewish perspectives on extraterrestrial life are not limited to a single interpretation and can develop alongside changing scientific knowledge.

3.5. Rabbi Norman Lamm and Extraterrestrial Life

Rabbi Norman Lamm, a prominent Jewish theologian and scholar, directly examined the religious implications of the possibility of extraterrestrial life. In his work *The Religious Implications of Extraterrestrial Life*, he considered how the discovery of intelligent life beyond Earth could affect Jewish ideas about humanity, creation, and the place of human beings in the universe. Lamm argued that Jewish thought should take the possibility seriously rather than reject it simply because it challenges traditional assumptions. His approach is particularly relevant to this study because it treats extraterrestrial life as a question that can be examined through both scientific developments and Jewish theology.

Reference for later:

Lamm, N. *The Religious Implications of Extraterrestrial Life: A Jewish Exotheology.*

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

3.6. Rabbi Hasdai Crescas and Multiple Worlds

Rabbi Hasdai Crescas (c. 1340–1410/11), a major medieval Jewish philosopher, presented an unusually broad view of the cosmos for his time. In *Or Hashem* (*Light of the Lord*), Crescas argued for the possibility of multiple worlds and rejected the idea that Jewish scripture or Talmudic tradition necessarily ruled out such a possibility. His cosmological ideas allowed for an extended and potentially infinite universe containing multiple worlds, creating an important historical connection between Jewish philosophy and the question of life beyond Earth. Later scholarship has identified Crescas as one of the significant medieval Jewish thinkers to consider multiple worlds in a way that could accommodate the possibility of extraterrestrial life. **(Crescas; Ackerman, 2017)**

3.7. Development of Jewish Thought on Extraterrestrial Life

Jewish perspectives on the possibility of life beyond Earth have developed across different historical periods and intellectual traditions. Rabbi Hasdai Crescas's discussion of multiple worlds represents an earlier philosophical approach in which the existence of other worlds could be considered within a Jewish intellectual framework. His ideas are significant because they show that questions about the structure and extent of the universe were not entirely limited to the modern scientific period. Much later, Rabbi Norman Lamm directly examined the possible religious implications of discovering extraterrestrial life and considered how such a discovery could relate to Jewish ideas about creation and humanity's place in the universe. Although their historical contexts and approaches were very different, both demonstrate that the possibility of worlds beyond Earth could be discussed without necessarily being viewed as incompatible with Jewish thought.

These perspectives also illustrate an important distinction between **the existence of other worlds** and **the existence of life in those worlds**. A belief or philosophical argument supporting multiple worlds does not by itself establish that those worlds contain living beings. Similarly, the possibility of extraterrestrial life remains different from evidence that such life exists. This distinction is important for the present study because it allows Jewish theological and philosophical discussions to be examined on their own terms while keeping them separate from modern scientific claims. **(Crescas; Lamm).**

3.8 Torah Text and Later Jewish Interpretation

It is important to distinguish between what is directly stated in the Torah and what was developed through later Jewish philosophical and theological interpretation. The Torah provides the foundational accounts of creation, the heavens, the Earth, and living beings, but later Jewish

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

thinkers examined these ideas through the intellectual and scientific knowledge available in their own periods. Discussions of multiple worlds and the possibility of creation beyond the Earth therefore belong primarily to the history of Jewish interpretation rather than being treated as direct statements of the Torah itself. This distinction is important for the present study because it allows the original text and later interpretations to be examined separately while still understanding how Jewish thought developed around questions concerning the wider universe.

3.9 Multiple Worlds in Medieval Jewish Thought

The question of whether multiple worlds could exist was also discussed within medieval Jewish philosophy, particularly in relation to broader debates about the nature and extent of creation. Jewish thinkers did not hold a single position on this question. Some philosophical traditions allowed greater room for the possibility of other worlds, while others rejected the idea based on their understanding of creation and the structure of the universe. These differences are significant because they show that Jewish thought included an ongoing intellectual discussion about whether the world known to humanity represented the entirety of creation. The debate also demonstrates that the idea of other worlds should not be treated as a uniquely modern concept, even though modern astronomy has given the question an entirely different scientific context.

3.10. Maimonides and the Limits of Human Knowledge

Maimonides (1138–1204) developed a detailed philosophical approach to the nature of the universe and the limits of human knowledge. In his *Guide for the Perplexed*, he discussed the celestial spheres and emphasized that human understanding of heavens has significant limitations. He argued that astronomical theories should not automatically be treated as certain knowledge, since observations of the heavens can be incomplete, and different models may explain the same phenomena. Maimonides also recognized that scientific understanding could develop, and that statements about astronomical matters made by earlier authorities were not necessarily beyond question.

This perspective is relevant to the present study because it provides an important distinction between **religious interpretation and knowledge about the physical universe**. Maimonides' approach suggests that questions concerning the nature of the heavens should be examined carefully rather than assuming that every traditional cosmological description represents permanent scientific knowledge. This becomes particularly important when considering modern questions about other worlds and possible life beyond Earth, where new astronomical discoveries can expand or challenge earlier understandings of the universe.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

3.11. Modern Jewish Perspectives

Modern Jewish thought has developed different approaches to the relationship between religious tradition and scientific understanding of the universe. Many Jewish thinkers have viewed scientific investigation as compatible with religious belief, while others have preferred to interpret traditional descriptions of creation in a non-literal or philosophical manner. This approach becomes relevant to the question of extraterrestrial life because modern astronomy has greatly expanded human knowledge of the universe and has raised questions that were not directly addressed in ancient texts. Some Jewish thinkers have therefore considered whether the discovery of life elsewhere would require a reinterpretation of traditional ideas about creation and humanity's place in the universe. These perspectives suggest that Jewish thought can engage with new scientific possibilities while continuing to distinguish between theological meaning and empirical evidence.

3.12. Overall Torah Perspective

The Torah presents creation as an ordered reality that includes the heavens, the Earth, celestial bodies, and a wide diversity of living beings. While its foundational creation accounts do not directly describe life on other planets, they provide a broader framework for understanding the universe and humanity's place within it. Later Jewish philosophical and theological discussions expanded these questions, with thinkers such as Hasdai Crescas considering the possibility of multiple worlds, Norman Lamm examining the religious implications of extraterrestrial life, and Maimonides emphasizing the importance of recognizing the limits of human knowledge concerning the cosmos.

These perspectives demonstrate that Jewish thought has not been limited to a single understanding of the universe or the possibility of creation beyond Earth. At the same time, a distinction must be maintained between what the Torah itself states, what later Jewish thinkers interpreted from it, and what modern science has established through observation. The possibility of other worlds or extraterrestrial life can therefore be explored within Jewish intellectual history without presenting these interpretations as scientific evidence. Overall, the Torah and later Jewish thought provide a historical and theological perspective that contributes to the wider comparative study of humanity's understanding of life and creation beyond Earth.

---

4. The Zabur and Psalms: Creation and the Wider Universe

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

4.1 Introduction: The Zabur and Psalms:

The Zabur holds a distinct place in Islamic tradition as a revelation associated with Prophet David (peace be upon him). The biblical Book of Psalms, meanwhile, preserves a collection of hymns, prayers, and poetic reflections traditionally associated with David and other figures of ancient Israel. Across these writings, the heavens, stars, Earth, and the greatness of creation appear repeatedly as subjects of reflection. Rather than approaching these descriptions as scientific statements, they can be read as expressions of how the writers understood humanity's position within a vast created universe. This makes the Psalms particularly useful for examining the historical and religious imagination surrounding the heavens and the wider cosmos, while also keeping the Islamic concept of the Zabur distinct from the surviving biblical text.

4.2. The Heavens and Humanity's Place in Creation

Psalm 8 reflects the vastness of the heavens and the position of humanity within creation. It describes the heavens as the work of God's hands and mentions the moon and stars established by Him. The passage then turns to the human being and asks what place humanity holds within such a vast creation, emphasizing both human significance and humility. This relationship between the immense heavens and the relatively small position of humanity provides an important perspective for the present study. It shows that the Psalms encourage reflection on a universe that extends far beyond the immediate human environment, even though the passage itself does not directly discuss life beyond Earth. **(Psalm 8:3–9).**

4.3. The Diversity and Order of Creation

Psalm 104 presents a broad description of the natural world, moving from heavens and the Earth to mountains, waters, animals, and other forms of life. The passage portrays these different parts of creation as interconnected and sustained within an ordered system. It also describes creatures inhabiting different environments, emphasizing the variety found throughout creation. This broader picture is relevant to the present study because it presents creation as extensive and diverse, while leaving open questions about the full extent of life and existence within the universe. **(Psalm 104:1–25)**

4.4. The Heavens as a Reflection of Creation

Psalm 19 presents the heavens as a visible expression of the created order, describing them as declaring the glory of God and displaying the work of His hands. The passage draws attention to

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

the sky and the movement of the sun, presenting the celestial realm as something that can be observed and contemplated by humanity. Its emphasis on the heavens as a vast and ordered part of creation adds another dimension to the Psalms' understanding of the cosmos. While the passage does not refer to extraterrestrial life, it places the human observer within a much larger celestial environment and encourages reflection on the extent and nature of creation. **(Psalm 19:1–6)**

4.5. Interpreting the Cosmic Perspective of the Psalms

The Psalms present the heavens not simply as physical surroundings, but as part of a larger order through which the nature and greatness of creation can be contemplated. References to the heavens, stars, the sun, and the Earth repeatedly place human existence within a much wider cosmic setting. From this perspective, the significance of the Psalms for the question of extraterrestrial life lies less in providing a direct description of other inhabited worlds and more in the way they portray creation as vast, ordered, and extending far beyond ordinary human experience. Their language therefore allows the possibility of a wider creation to be considered without requiring poetic descriptions of the heavens to be interpreted as scientific statements. This distinction is important when examining ancient religious texts alongside modern questions about the scale of the universe and the possibility of life beyond Earth. **(Psalm 8:3–9; Psalm 19:1–6; Psalm 104:1–25)**

4.6. Interpreting the Cosmic Perspective of the Psalms

The cosmic language of the Psalms is primarily theological and poetic, but its significance extends beyond simple descriptions of nature. By repeatedly placing the heavens, stars, and Earth within a single created order, the Psalms present human existence as one part of a much larger reality. From a research perspective, this does not establish the existence of extraterrestrial life; rather, it provides a conceptual framework in which the universe is understood as broader than the immediate human environment. This distinction is important because ancient references to heavens should not be converted into modern scientific claims without considering their literary purpose and historical context. At the same time, the emphasis on the vastness and diversity of creation leaves a legitimate philosophical question: whether the forms of existence known to humanity represent the full extent of creation. In this sense, the Psalms contribute to the wider discussion by expanding the conceptual scope of the question, even where they do not provide direct evidence for life beyond Earth. **(Psalm 8:3–9; Psalm 19:1–6; Psalm 104:1–25)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

4.7. The Psalms and the Scope of Creation

The Psalms place humanity within a creation that is considerably greater than the immediate world experienced by human beings. Their repeated attention to the heavens, stars, and the vastness of creation can be understood as an acknowledgment of a reality that extends beyond ordinary human perception. However, the theological and poetic nature of these passages requires caution when considering their relevance to extraterrestrial life. They do not identify other inhabited worlds, nor do they establish a scientific model of the universe. Their significance instead lies in the broader conception of creation that they present: the observable world may represent only part of a much larger reality. This perspective creates a meaningful point of comparison with modern astronomy, where the discovery of numerous planetary systems has expanded scientific understanding of the possible environments in which life could exist. The connection, therefore, is not one direct prediction, but of conceptual scope—both approaches invite consideration of whether humanity and the Earth represent the entirety of existence or only one part of a much larger universe. **(Psalm 8:3–9; Psalm 19:1–6; Psalm 104:1–25)**

4.8. Overall Perspective of the Zabur and Psalms

The Zabur and Psalms present creation as a reality that extends far beyond the immediate human environment, repeatedly directing attention toward the heavens, stars, Earth, and the broader order of existence. Their significance for the study of extraterrestrial life, however, lies primarily in their conceptual treatment of creation rather than in any direct reference to inhabited worlds. The texts encourage reflection on the scale of the cosmos and humanity's position within it, but their poetic and theological language does not provide sufficient grounds for identifying specific celestial bodies or forms of life beyond Earth.

This distinction becomes important when these texts are placed alongside modern scientific inquiry. Astronomy investigates the physical universe through observation and evidence, whereas the Psalms address creation primarily through theological reflection and poetic expression. The two therefore operate through different forms of knowledge and should not be treated as equivalent sources of evidence. Nevertheless, the expansive cosmological perspective of the Psalms provides a meaningful historical and philosophical context for a question that modern science continues to investigate whether the Earth represents the only environment in which life has emerged, or whether life may be part of a much larger cosmic reality. The continuing exploration of the universe gives this question renewed significance, while the Psalms preserve an older tradition of reflecting humanity's place within an immense creation. This creates a useful bridge between historical religious thought and the questions being investigated by modern astronomy and astrobiology.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

5. Sunni Hadith Literature: Creation Beyond Earth

5.1. Sources and Approach

Sunni Hadith literature contains reports that discuss the heavens, the Earth, creation, and matters beyond ordinary human experience. Some narrations have been brought into discussions concerning multiple Earths and the wider structure of creation, but their evidentiary value cannot be assessed from the wording alone. The collection in which a report appears, its chain of transmission, the judgement of Hadith scholars, and the context of its interpretation all affect how it should be understood. This section therefore focuses on specific narrations rather than treating Sunni Hadith literature as a single, uniform source. Each relevant report will be considered according to its source, authenticity, meaning, and significance for the question of creation beyond Earth.

5.2. The Seven Earths in Sunni Hadith

A clear reference to seven Earths appears in a narration transmitted by **Sa ʻid ibn Zayd** from the Prophet Muhammad **(peace be upon him)**. The narration states that a person who unjustly takes even a handspan of land will be made to carry or bear the burden of **seven Earths** on the Day of Resurrection. The report is recorded in **Sahih al-Bukhari 3198**, in the chapter concerning the seven Earths, and a closely related version is also recorded in **Sahih Muslim 1610a**.

The primary context of the narration is ethical and legal: it condemns the unlawful seizure of another person's land. Nevertheless, its reference to “seven Earths” is significant for the present study because it indicates that the concept of multiple Earths occurs explicitly within major Sunni Hadith collections. The narration itself, however, does not explain whether these seven Earths should be understood as physical layers, separate realms, or in another manner. Therefore, its relevance to extraterrestrial life depends on how the concept is interpreted rather than on the wording alone.

5.3. Interpreting the Concept of the Seven Earths

The reference to seven Earths in Sunni Hadith literature raises a question that cannot be answered from the narration alone: whether the expression describes a physical cosmological reality, different levels or regions of the Earth, or a form of creation whose nature was not intended to be explained in physical terms. The narration in *Sahih al-Bukhari* occurs within a discussion of the unlawful possession of land, which means that its immediate purpose is ethical rather than cosmological **(Sahih al-Bukhari, 3198)**. This context is important because the mention of seven Earths should not automatically be treated as a scientific statement about planetary bodies.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

At the same time, the explicit use of the expression “seven Earths” gives the concept significance beyond the immediate legal warning. It shows that the idea appears within major Sunni Hadith collections, including *Sahih al-Bukhari* and *Sahih Muslim* **(Sahih al-Bukhari, 3198; Sahih Muslim, 1610a)**. The absence of a detailed physical explanation leaves room for later interpretation, but that interpretive openness should not be confused with proof of extraterrestrial worlds. From the perspective of this research, the value of these narrations lies in documenting how ideas about the structure and extent of creation appear within the Islamic intellectual tradition, while keeping their theological, literary, and scientific meanings distinct.

5.4. The Beginning and Extent of Creation

A broader description of creation appears in a narration recorded in *Sahih al-Bukhari*, where the Prophet Muhammad **(peace be upon him)** is reported to have explained the beginning of creation by stating that Allah created the heavens and the Earth after describing the Throne as being over the water. The narration appears in the context of people asking about the beginning of the universe, making it particularly relevant to a study concerned with the extent and structure of creation. **(Sahih al-Bukhari, 3191; 7418)**

The importance of this report for the present study lies primarily in its cosmological context. It presents creation as a reality extending beyond the Earth and places the heavens, the Earth, and other created realities within a larger order. At the same time, the narration does not identify other planets as inhabited or describe extraterrestrial organisms. Its value is therefore better understood as evidence of a broader cosmological framework within Sunni Hadith literature rather than as a direct statement about extraterrestrial life. This distinction allows the narration to contribute to the discussion without assigning it a meaning that goes beyond its actual wording.

5.5. A Report Concerning Life Across the Seven Earths

A particularly interesting report attributed to **Ibn ʿAbbas (may Allah be pleased with him)** interprets Qur’an 65:12 as referring to seven Earths and states that each Earth contains a prophet like the Prophet Muhammad **(peace be upon him)**, along with figures corresponding to Adam, Noah, Abraham, and Jesus **(peace be upon them)**. The report is recorded in *al-Mustadrak* of al-Hakim and transmitted by al-Bayhaqi and al-Tabari.

If taken at face value, the report presents a striking conception of multiple Earths containing their own forms of human-like creation and prophetic figures. This makes it considerably more relevant to the question of life beyond Earth than a simple reference to “seven Earths.” However, its attribution and status require caution. It is **not a Prophetic Hadith**, but a report stopping at Ibn Abbas, and later scholars have disagreed about its reliability; al-Hakim considered its chain sound, while other Hadith scholars have criticized the report as anomalous or problematic.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

From a scientific perspective, the report cannot be treated as evidence that inhabited planets or parallel human civilizations exist. Its importance lies instead in documenting that a remarkably expansive interpretation of Qur'an 65:12 existed within early Islamic exegetical tradition. This makes the report valuable for studying the history of Islamic ideas about multiple worlds, while its disputed status prevents it from being presented as established Sunni doctrine or empirical evidence for extraterrestrial life. **(*Al-Mustadrak Aala al-Sahihayn*, 3822; *al-Asma wa al-Sifat* of al-Bayhaqi; al-Tabari's *Tafsir.)***

5.6. The Seven Earths and Cosmic Distances

A more detailed cosmological description appears in a narration attributed to Abu Hurairah (may Allah be pleased with him) and recorded in *Jamiʿ al-Tirmidhi 3298*. In the report, the Prophet Muhammad (peace be upon him) describes the heavens and the Earth in a layered structure and states that the distance between the heavens, and between each of the seven Earths, is described as a journey of five hundred years. The narration therefore goes beyond the simple mention of "seven Earths" and presents them as distinct parts of a larger cosmological arrangement (Jami-al-Tirmidhi, 3298).

The report is particularly interesting for this research because it gives the concept of multiple Earths a spatial dimension. However, its transmission history requires careful treatment. Imam al-Tirmidhi himself describes the report as gharīb through this route and notes that al-Hasan al-Basri did not hear directly from Abu Hurairah according to several transmitters. The narration has consequently received differing assessments from later scholars.

Its scientific relevance therefore needs to be framed carefully. The narration should not be converted into a modern measurement of planetary distances, since the "five hundred years" description belongs to its own religious and cosmological framework. Nevertheless, it is significant for the history of Islamic cosmological thought because it presents creation as extending through multiple Earths and heavens separated by immense distances. This makes it relevant to the broader question of whether traditional Islamic literature conceptualized reality as extending beyond the immediately observable human world, while leaving the actual physical nature of these realms open to interpretation. (*Jamiʿ al-Tirmidhi*, Hadith **3298**, *Chapters on Tafsir*, Surat al-Hadid).

5.7. The Vastness of Creation and the Inhabitants of the Heavens

The descriptions of the heavens in Sunni Hadith literature extend beyond the physical structure of the cosmos to include forms of existence that are not part of ordinary human experience. In the account of the Prophet Muhammad (peace be upon him**)** ascending through the heavens, he is described as encountering different prophets (peace be upon them) in the successive heavens and being shown **al-Bayt al-Maʿmur**, where seventy thousand angels are said to enter each day, with

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

each group not returning again. This description presents heavens as realms containing an immense population of beings beyond humanity.

The narration is significant because it presents a scale of non-human creation that extends far beyond ordinary human experience. Its immediate purpose is theological rather than astronomical, and the angels described in the report should not be equated with biological extraterrestrial organisms. Nevertheless, the scale and diversity of creation presented in the narration provide an interesting conceptual comparison with the modern question of whether humanity represents the complete extent of life and existence. The narration therefore contributes to the broader Islamic conception of a universe containing forms of existence beyond humanity, while its theological nature means that it should not be treated as scientific evidence for extraterrestrial life. **(Sahih al-Bukhari, 3207)**

5.8. The Unseen and the Boundaries of Human Knowledge

Sunni Hadith literature frequently presents existence as extending beyond the limits of ordinary human perception. Accounts concerning heavens, angels, and other unseen realities (*al-ghayb*) suggest a conception of creation in which what human beings can directly observe does not necessarily constitute the whole of existence. This is significant for the present study because the question of extraterrestrial life also concerns the limits of human knowledge: whether life is confined to the environments currently known to humanity or may exist elsewhere in the universe.

However, the theological category of *al-ghayb* should not be treated as equivalent to extraterrestrial life. Angels and other unseen beings belong to a religious and metaphysical framework, whereas extraterrestrial organisms, if discovered, would constitute a subject of biological and astronomical investigation. The value of these Hadith therefore lies in establishing a broader conception of existence beyond ordinary human observation, rather than providing evidence for life on other planets. This distinction allows the Islamic conception of the unseen to be considered alongside modern scientific questions without collapsing fundamentally different categories of knowledge into one another. **(Sahih al-Bukhari, 3207; Sahih Muslim, 162)**

5.9. The Heavens, the Earths, and Those Within Them

A particularly significant expression appears in a supplication attributed to the Prophet Muhammad (peace be upon him), recorded in *Jamiʿ al-Tirmidhi 3418*. The narration describes Allah as the “Lord of the heavens and the earth and whoever is in them,” thereby referring not only to the celestial and terrestrial realms themselves but also to those who exist within them. The wording is notable because it presents the heavens and Earth as containing or encompassing forms of existence, rather than treating them merely as empty physical spaces. **(Jamiʿ al-Tirmidhi, 3418)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

The immediate context of the narration is devotional rather than astronomical, and therefore it should not be interpreted as a technical description of the universe. Nevertheless, the phrase "whoever is in them" is relevant to the present study because it leaves the conceptual scope of creation broader than the human world alone. It does not identify extraterrestrial organisms or specify other inhabited planets, but it provides an example of Sunni Hadith language in which existence is associated with the heavens and the Earth together. This makes the narration useful for examining how Islamic tradition conceptualizes the possibility of forms of existence beyond the immediate human environment, while maintaining a clear distinction between theological language and scientific evidence. **(Jamiʿ al-Tirmidhi, 3418)**

5.10. The Lord of the Heavens, the Earths, and Everything

Another narration recorded in *Jamiʿ al-Tirmidhi 3400* contains the expression "Lord of the heavens and Lord of the earths, and our Lord, and the Lord of everything." The report occurs within a supplication taught for recitation before sleep and therefore has a devotional purpose rather than a cosmological one. Nevertheless, its wording is notable because it explicitly uses the plural **"earths"** and places them within a larger conception of creation that also includes the heavens and "everything." **(Jamiʿ al-Tirmidhi, 3400)**

Its relevance to extraterrestrial-life research lies primarily in the breadth of the cosmological language. The narration does not explain whether the plural Earths refers to physical worlds, layers, realms, or another aspect of creation, so equating them directly with modern planets would go beyond the evidence. At the same time, the wording demonstrates that the concept of multiple Earths appears not only in isolated reports but also in devotional material preserved within major Sunni Hadith literature. This strengthens the historical significance of the concept while leaving its physical interpretation open. **(Jamiʿ al-Tirmidhi, 3400)**

5.11. The Number and Extent of Creation

A further perspective appears in *Jamiʿ al-Tirmidhi 3555*, where the Prophet Muhammad **(**peace be upon him) teaches Juwairiyyah bint al-Harith a form of remembrance that praises Allah "according to the number of His creation," alongside references to the weight of His Throne and the extent of His words. The narration is explicitly devotional and does not attempt to quantify the universe. However, the expression "the number of His creation" is significant because it presents creation as an immense totality whose full extent is not reduced to the objects immediately known to human beings. **(Jamiʿ al-Tirmidhi, 3555)**

For the present study, this narration has more indirect relevance than reports concerning the seven Earths. It cannot be used to infer a particular number of planets, civilizations, or biological

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

species. Its value instead lies in the conceptual scale it attributes to creation: the language assumes a creation so extensive that human beings cannot simply equate what they know with the whole of what exists. This provides a useful theological background for the modern scientific question of whether life and other forms of existence may extend beyond Earth. **(Jamiʿ al-Tirmidhi, 3555)**

5.12. Classical Sunni Interpretations of the Seven Earths

The concept of seven Earths was not understood in the same way by all Muslim scholars. In his commentary on Qur'an 65:12, **Ibn Kathir** connects the verse with the Prophetic narrations concerning the seven Earths and presents them as part of the broader structure of creation. His discussion shows that the expression was treated as a meaningful cosmological concept within classical Sunni scholarship rather than merely as a poetic description of the Earth. **(Ibn Kathir, *Tafsir al-Qur'an al-Azim*, 65:12)**

At the same time, classical scholarship demonstrates why these reports must be interpreted carefully. Ibn Kathir records the report attributed to **Ibn Abbas (may Allah be pleased with him)** in which each of the seven Earths is described as containing forms of creation analogous to those found on Earth. However, he also transmits **al-Bayhaqi's criticism** of this report as *shādh*, meaning that its transmission was considered unusual or problematic despite the strength claimed for its chain. This means that the most detailed description of inhabited or inhabited-like Earths cannot simply be presented as an uncontested Sunni belief. **(Ibn Kathir, *Tafsir al-Qur'an al-Azim*, 65:12; al-Bayhaqi, *al-Asma wa al-Sifat*)**

This distinction is particularly important when the material is compared with modern science. The classical term "seven Earths" cannot automatically be equated with **seven planets, exoplanets, or parallel worlds**, because the original texts do not provide those scientific definitions. What the sources do establish is that the idea of multiple Earths formed part of Islamic cosmological discussion, while the precise physical nature of those Earths remained open to interpretation. Therefore, the strongest conclusion is not that classical Hadith predicted extraterrestrial life, but that they preserved a conception of creation whose **scope could extend beyond the single human world known to its early interpreters**.

5.13. Contemporary Sunni Approaches to Extraterrestrial Life

Contemporary Sunni scholarship generally approaches the possibility of extraterrestrial life with caution rather than treating it as either established fact or theological impossibility. Discussions of the "seven Earths" demonstrate that classical interpretations have included multiple possibilities, ranging from layered Earths to distinct realms or worlds, while emphasizing that the exact nature of these Earths is not clearly defined by the Qur'an and authentic Hadith. Some contemporary Sunni scholars therefore consider it safer to affirm what the texts explicitly state

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

while avoiding attempts to identify the seven Earths with modern planets or galaxies. **(Misra, 2022; Desai, 2012)**

This approach is particularly relevant when Islamic sources are compared with modern astronomy. The scientific discovery of exoplanets and the continuing search for habitable environments does not prove any classical interpretation of the seven Earths, but it does demonstrate that the physical universe is far more extensive than the human environment known to earlier generations. Contemporary Sunni discussion therefore illustrates an important methodological position: religious texts may establish theological concepts without necessarily providing the physical details required to identify them scientifically. The possibility of extraterrestrial life can consequently remain an open scientific question without requiring either a forced confirmation or rejection based solely on traditional cosmological interpretations.

5.14. Overall Sunni Hadith Perspective

The Sunni Hadith material examined in this section presents a complex picture of how the extent of creation has been understood within Islamic tradition. The concept of the seven Earths appears in highly authoritative collections such as *Sahih al-Bukhari*, while other narrations expand the cosmological picture through references to the heavens, their inhabitants, the Earths, and the immense scale of creation **(Sahih al-Bukhari, 3198; Sahih al-Bukhari, 3207; Jamiʿ al-Tirmidhi, 3400; Jamiʿ al-Tirmidhi, 3418; Jamiʿ al-Tirmidhi, 3555)**. At the same time, the most explicit report concerning analogous prophetic and human-like communities on separate Earths is attributed to Ibn ʿAbbas (may Allah be pleased with him) rather than directly to the Prophet Muhammad (peace be upon him), and its status was subject to scholarly disagreement **(al-Hakim, *al-Mustadrak*, 3822; al-Bayhaqi, *al-Asmaʾ wa al-Sifat*)**. This difference in evidentiary strength is essential: the existence of a textual concept is not equivalent to the establishment of a particular cosmological interpretation.

From the perspective of the present research, Sunni Hadith literature therefore contributes primarily to the historical and conceptual study of Islamic cosmology. It preserves descriptions in which the created order extends beyond the immediate human environment, while leaving the precise physical nature of many of these realms unresolved. Modern astronomy cannot be used to retroactively assign meanings such as “exoplanet” or “extraterrestrial civilization” to these texts, just as theological descriptions cannot substitute for empirical investigation. The most defensible conclusion is therefore that Sunni Hadith literature provides substantial material for examining how Islamic tradition conceptualized a creation potentially broader than the human world, but it does not, by itself, constitute scientific evidence that extraterrestrial life exists.

---

6. Extraterrestrial Life in Shia Hadith and Islamic Tradition

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

6.1. Multiple Worlds and the Extent of Creation

A notable tradition attributed to Imam Jaʿfar al-Sadiq (peace be upon him) describes the existence of twelve thousand worlds, with each world presented as having its own inhabitants. The tradition further states that the inhabitants of one world do not perceive the existence of the others. This description presents an unusually expansive conception of creation in Shia Hadith literature, in which the world known to humanity is not necessarily understood as the entirety of existence. **(al-Saduq, *al-Khisal*, vol. 2, p. 639)**

The significance of this tradition for the present study lies in its explicit reference to multiple worlds together with inhabitants, rather than merely referring to the heavens or the Earth in plural terms. At the same time, the numerical figure of twelve thousand should not automatically be interpreted as a literal astronomical measurement, nor should the "worlds" be equated directly with modern planets or exoplanets. The report is better understood as evidence of an expansive conception of creation within the Shia intellectual tradition. Its relevance to extraterrestrial-life research therefore lies in the possibility it presents—that forms of inhabited existence may extend beyond the human world—while leaving the physical nature of those worlds open to interpretation. **(al-Saduq, *al-Khisal*, vol. 2, p. 639)**

6.2. The Twelve Thousand Worlds

A particularly expansive tradition attributed to Imam Jaʿfar al-Sadiq (peace be upon him) states that Allah created twelve thousand worlds, with each world described as greater than the seven heavens and the seven Earths. The narration further states that the inhabitants of one world do not perceive the existence of another world and concludes by describing the Imam as proof over all of them. The report is transmitted in *al-Khiṣāl*, making it one of the most striking traditions in Shia literature concerning the plurality and extent of creation **(al-Saduq, *al-Khisal*, Vol. 1, Book 29, Chapter 3, Hadith 1)**.

The wording is particularly significant because the narration does not merely refer to multiple celestial realms; it describes a large number of distinct worlds associated with their own inhabitants. At the same time, its numerical and cosmological language should not automatically be mapped onto modern concepts such as galaxies, planets, or extraterrestrial civilizations. The transmission also requires qualification: the chain contains the expression *ʿamman ḥaddathahu* ("from one who narrated it"), leaving a gap in the chain. It is therefore more appropriate to describe the report as chain-disputed or mursal rather than simply classifying it as ṣaḥīḥ. **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 29, Chapter 3, Hadith 1)**

For the present study, the importance of the narration lies in the conceptual scope it assigns to creation. It presents humanity's known world as only one part of a much larger reality containing other inhabited worlds, while simultaneously acknowledging that the inhabitants of those worlds

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

may be unaware of one another. This makes the report highly relevant to the historical study of ideas resembling extraterrestrial or non-human inhabited worlds, while its disputed chain means that it should be treated as evidence of a transmitted theological tradition rather than as empirical evidence for extraterrestrial life.

6.3. One Million Worlds and One Million Adams

A particularly expansive tradition attributed to Imam Muhammad al-Baqir (peace be upon him) describes a succession of creations extending beyond the world known to humanity. In the report, a discussion of Qur'an 50:15 leads to a description of another world, another creation, another Earth, and another heaven, followed by the statement that Allah created "one million worlds and one million Adams." Our Adam and our world are presented as belonging to the later part of this succession **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 29, Chapter 9, Hadith 1; *al-Tawḥīd*, Book 2, Chapter 38, Hadith 2)**.

The importance of this report lies not simply in its numerical scale, but in the distinction, it appears to be made between separate creations. The reference to different worlds, Earths, heavens, and Adams suggests a conception of creation that is more pluralistic than a single human-centered world. At the same time, the terminology belongs to a theological and cosmological framework that cannot be assumed to correspond directly with modern categories such as planets, exoplanets, or extraterrestrial civilizations. The phrase "one million worlds and one million Adams" should therefore be examined as a statement within the transmitted Shia intellectual tradition rather than treated as a literal astronomical measurement.

Its relevance to the present study is nevertheless considerable. If understood within its own textual framework, the report presents humanity's world as one component within a much larger plurality of creations and raises the possibility that other worlds may possess forms of existence comparable, though not necessarily identical to our own. However, because the report's transmission and interpretation require independent evaluation, it should be presented as evidence of a particular cosmological tradition rather than as established proof of extraterrestrial life. **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 29, Chapter 9, Hadith 1; *al-Tawhid*, Book 2, Chapter 38, Hadith 2).**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

6.4. The Seven Creations Before Adam

A tradition attributed to Imam Muhammad al-Baqir (peace be upon him) presents a different dimension of plurality in creation. In response to a question concerning Qur'an 50:15 and the possibility of a "new creation," the report describes seven creations that existed upon the Earth before Adam (peace be upon him). These creations are presented as distinct from Adam's descendants and are described as having occupied the Earth successively before the creation of Adam and humanity **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 8, Chapter 32, Hadith 1)**.

The significance of this report lies in what it implies about the relationship between Adam and the broader history of creation. It does not necessarily suggest that the seven creations inhabited separate planets and interpreting them as extraterrestrial civilizations would therefore exceed the explicit evidence of the text. Instead, the narration raises a different theological possibility: that Adam's creation needs not be understood as marking the absolute beginning of every form of terrestrial life or every created community. This distinction is important because it separates the concept of **plurality of creation** from the more specific question of extraterrestrial life.

Within the wider body of Shia traditions examined here, the report becomes particularly interesting when placed alongside accounts of multiple worlds and successive creations. It suggests that creation may be understood as a process containing distinct stages or communities rather than as a single, uninterrupted human history. Its relevance to the present study therefore lies primarily in expanding the conceptual boundaries of creation, while leaving the precise identity, nature, and historical status of these earlier creations open to interpretation. **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 8, Chapter 32, Hadith 1).**

6.5. The Thirty-Nine White Lands and Their Inhabitants

Among the Shia traditions concerning the plurality of creation, a report attributed to Imam Jaʿfar al-Sadiq (peace be upon him) is particularly noteworthy for its description of inhabited realms distinct from the world of Adam (peace be upon him). In the narration, Imam al-Sadiq (peace be upon him) speaks of numerous "domes" and describes thirty-nine other regions associated with the west as containing white lands inhabited by creatures that possess their own light. These beings are described as having no knowledge of the creation of Adam (peace be upon him), suggesting that they belong to a distinct order of creation rather than to Adam's human descendants. **(al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 301, Hadith 1)**

The importance of this narration lies in the combination of two elements: **distinct inhabited realms and inhabitants independent of Adamic humanity**. This makes it more directly relevant to the question of non-human or non-Earth-based life than traditions that merely mention multiple heavens or Earths. Nevertheless, the report should not be transformed into a modern astronomical claim. Expressions such as "white lands," "wests," and "light" belong to

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

the cosmological language of the tradition, and the text does not provide sufficient information to identify these realms with planets, moons, or other astronomical bodies known to modern science.

Its evidentiary status also requires distinction from its interpretive significance. The report is preserved in *al-Kafi*, but its later evaluation has not been uniformed across all Shia scholarship; Allamah al-Majlisi, for example, graded the narration as sahih, while such later grading should not be confused with the original transmission itself. **(al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 301, Hadith 1)**

For this research, the most defensible significance of the narration is therefore historical and conceptual. It demonstrates that a strand of Shia Islamic thought preserved a conception of creation containing inhabited realms that were independent of Adamic humanity. Whether these descriptions correspond to physical worlds, metaphysical realms, or a cosmological conception that cannot be translated directly into modern scientific categories remains unresolved. The narration consequently provides a particularly important textual case for examining the possibility of life beyond humanity without claiming that it constitutes scientific confirmation of extraterrestrial life. **(al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 301, Hadith 1).**

6.6. The Diversity of Created Species

A further tradition attributed to Imam Ali (peace be upon him) presents creation in terms of a striking diversity of species. The report states that Allah created 1,200 species on land and another 1,200 species in the sea, while also distinguishing the descendants of Adam (peace be upon him) from other created groups such as Yaʾjuj and Majus. **(al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 274, Hadith 1)** Unlike the traditions describing multiple worlds, this report does not explicitly place these species on other planets or separate worlds. Its relevance therefore lies primarily in its broader conception of biological diversity within creation. The distinction between terrestrial, marine, human, and other forms of creation suggests that the Islamic conception of life was not necessarily restricted to a single category of living beings. However, the narration should be treated cautiously: its transmission has received a weak (*ḍaʿīf*) assessment from Allamah al-Majlisi, making it support rather than primary evidence. **(al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 274, Hadith 1)**

For the present research, its value is therefore limited but still useful. It contributes to the wider Shia discussion of the diversity and plurality of creation, while the stronger extraterrestrial-life implications remain with reports that explicitly describe multiple worlds or inhabitants beyond Adamic humanity. This distinction is important for maintaining an evidence-based hierarchy rather than treating every unusual cosmological narration as equally significant. **(al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 274, Hadith 1).**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

6.7. Seven Heavens, Seven Earths, and the Structure of Creation

References to the seven heavens and seven Earths occur repeatedly within Shia Hadith literature and form part of a broader cosmological vocabulary for describing the created order. A narration preserved in *al-Kafi* describes Allah as the Lord of the seven heavens, the seven Earths, and whatever exists within and between them. The wording is significant because it does not present the heavens and Earths as isolated objects; instead, it places them within a larger system containing other forms of existence and intervening realms **(al-Kulayni, *al-Kafi*, Vol. 3, Book 4, Chapter 72, Hadith 1)**.

From the perspective of extraterrestrial-life research, however, the reference to seven Earths must be interpreted cautiously. The text does not define these Earths as planets in the modern astronomical sense, nor does it state that they contain biological life. Treating the expression as a direct reference to seven extraterrestrial planets would therefore introduce a meaning that the narration itself does not establish. Its importance is instead structural: it demonstrates that the cosmological framework preserved in Shia Hadith could conceive creation as consisting of multiple Earths within a much larger reality.

This becomes more significant when the narration is compared with the Shia reports discussed above. On its own, the "seven Earths" tradition provides broad cosmological context; when considered alongside reports describing twelve thousand worlds, one million worlds and Adams, or inhabited lands beyond the human world, it forms part of a wider textual pattern concerning plurality of creation. The evidentiary strength of these reports is not identical, however, and they must therefore be assessed individually rather than combined to produce a conclusion stronger than any of the sources can independently support. **(al-Kulayni, *al-Kafi*, Vol. 3, Book 4, Chapter 72, Hadith 1).**

6.8. Divine Authority and the Scope of Creation

Another group of Shia narrations concerns the presence of divine authority on Earth. A report attributed to Imam Muhammad al-Baqir (peace be upon him) states that Allah has never left the Earth without an Imam who guides people toward Him. Similar traditions appear elsewhere in Shia Hadith literature and relate to the theological concept of the ḥujjah, or divine proof, upon the Earth **(al-Kulayni, *al-Kafi*, Vol. 1, Book 4, Chapter 5, Hadith 8)**.

Although this material is not direct evidence for extraterrestrial life, it is relevant to the broader question of how Shia theology conceptualizes inhabited creation and divine guidance. The narration specifically concerns the Earth and the continuity of divine authority, so extending it to other planets or extraterrestrial civilizations would go beyond its explicit meaning. Its importance lies instead in establishing a theological principle: wherever human religious existence is considered, the question of divine guidance is also significant. This becomes

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

particularly interesting when placed alongside traditions describing multiple worlds, because it raises a further theological question about whether distinct inhabited creations would have their own forms of divine guidance.That question, however, should remain clearly separated from what the narration establishes. The Hadith itself does not state that other worlds possess Imams or prophets, nor does it describe extraterrestrial civilizations. It therefore functions best as a **theological extension of the discussion**, rather than as direct evidence for extraterrestrial life. **(al-Kulayni, *al-Kafi*, Vol. 1, Book 4, Chapter 5, Hadith 8).**

6.9. Existing, Earlier, and Future Creations

The Shia traditions examined so far suggest that plurality of creation is not presented through a single cosmological model. Some reports describe worlds existing alongside the human world, while others refer to creations that preceded Adam (peace be upon him) or to a new creation that will follow the present order. The tradition attributed to Imam Muhammad al-Baqir (peace be upon him), for example, describes another world, another creation, another Earth, and another heaven in connection with the future transformation of the present creation **(al-Saduq, *al-Tawhid*, Book 2, Chapter 38, Hadith 2)**. When considered alongside the reports of twelve thousand worlds and the thirty-nine inhabited lands, this produces three distinct conceptual categories: creation existing beyond the familiar human world, creation preceding Adamic humanity, and creation that may follow the present order.

This distinction is important because these categories should not be combined into a single claim about extraterrestrial life. A world described as existing alongside ours, a creation that preceded Adam, and a future creation represent different theological ideas and cannot automatically be interpreted as planets inhabited by extraterrestrial organisms. Nevertheless, their coexistence within Shia transmitted literature is significant for the present study because it reflects a conception of creation that is dynamic, plural, and considerably broader than the human world alone. The scientific question of extraterrestrial life remains separate, but these traditions provide an important historical framework for examining how the possibility of multiple forms and stages of creation has been conceptualized within Shia thought. **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 29, Chapter 3, Hadith 1; Vol. 1, Book 29, Chapter 9, Hadith 1; *al-Tawhid*, Book 2, Chapter 38, Hadith 2; al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 301, Hadith 1).**

6.10. Source Reliability and Interpretive Boundaries

The Shia traditions discussed in this section differ in their transmission history and scholarly evaluation, so they should not be treated as equally authoritative. Some reports contain incomplete or disputed chains, while others have received favorable assessments from later Shia scholars. For example, the tradition concerning twelve thousand worlds contains a gap in its chain and should therefore be identified as chain-disputed rather than simply classified as ṣaḥīḥ. The report concerning the thirty-nine white lands, on the other hand, received a ṣaḥīḥ assessment

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

from Allamah al-Majlisi **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 29, Chapter 3, Hadith 1; al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 301, Hadith 1)**.

These differences are important when considering the relevance of traditions to extraterrestrial life. Terms such as "world," "Earth," and "creation" should not automatically be equated with modern concepts such as planets or exoplanets. At the same time, the traditions remain historically significant because they preserve ideas of multiple worlds, distinct creations, and inhabitants beyond Adamic humanity. The most balanced approach is therefore to examine their textual and theological meaning while keeping their evidentiary limits clear. This also prevents isolated narrations from being presented as representative of the entire Shia theological tradition. It allows stronger reports to be distinguished from weaker or disputed material without dismissing the broader intellectual significance of the collection. Such an approach is especially important when comparing traditional cosmological ideas with questions raised by modern astronomy and astrobiology. **(al-Saduq, *al-Khiṣāl*; al-Kulayni, *al-Kafi*).**

6.11. Overall Shia Hadith Perspective

The Shia Hadith material examined in this section presents a broad conception of creation in which the human world is not necessarily understood as the only form of existence. Traditions attributed to Imam Jaʿfar al-Sadiq (peace be upon him) describe twelve thousand worlds and inhabited lands whose creatures are presented as independent of Adamic humanity, while traditions attributed to Imam Muhammad al-Baqir (peace be upon him) describe one million worlds and one million Adams, as well as creations preceding Adam (peace be upon him). **(al-Saduq, *al-Khiṣāl*, Vol. 1, Book 29, Chapters 3 and 9; *al-Tawhid*, Book 2, Chapter 38; al-Kulayni, *al-Kafi*, Vol. 8, Book 1, Chapter 301)**

These reports are particularly relevant to the question of extraterrestrial life because some explicitly describe worlds associated with their own inhabitants. However, their terminology should not automatically be equated with modern concepts such as planets or extraterrestrial civilizations. Their transmission status also varies, meaning that they should not all be treated equally authoritatively. Their strongest contribution to this research is therefore historical and conceptual: they demonstrate that the possibility of multiple worlds and forms of creation beyond Adamic humanity has a significant place within Shia intellectual tradition. Whether such worlds physically exist remains a question for modern scientific investigation. **(al-Saduq, *al-Khisal*; *al-Tawhid*; al-Kulayni, *al-Kafi*).**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

7. Science and the Search for Extraterrestrial Life

7.1. The Scientific Question of Life Beyond Earth

The scientific search for extraterrestrial life begins with a simple but unresolved question: Is life a unique feature of Earth, or can it emerge elsewhere in the universe? Unlike religious or philosophical discussions, science approaches this question through observation, measurement, experimentation, and evidence that can be independently tested. At present, Earth remains the only place where life has been confirmed. Despite the discovery of thousands of planets beyond our Solar System, there is still no confirmed scientific evidence of life beyond Earth. The scientific position is therefore not that extraterrestrial life exists or does not exist, but that the available evidence has not yet established its existence. **(NASA, "Are We Alone?"; NASA Astrobiology)**

The question has nevertheless become increasingly important because astronomers now know that planets are common beyond the Solar System. More than 6,000 exoplanets have been confirmed, with many additional candidates awaiting verification. This has shifted the scientific question from whether other planets exist to whether some of these worlds possess conditions that could support life. Astrobiology consequently brings together astronomy, planetary science, chemistry, geology, and biology to investigate the origin, evolution, distribution, and potential existence of life beyond Earth. **(NASA Exoplanet Exploration; NASA Astrobiology)**

An important distinction must be made between habitability and actual life. A planet possessing liquid water, an atmosphere, organic molecules, or suitable temperatures would not automatically demonstrate the presence of living organisms. Scientists therefore search for combinations of environmental conditions and possible biosignatures that could provide stronger evidence of biological activity. Any potential detection would require careful testing because non-biological processes can sometimes produce signals that resemble possible signs of life. **(NASA, "Ladder of Life Detection"; NASA Astrobiology).**

7.2. The Scale of the Universe and the Search for Life

One of the main reasons extraterrestrial lives are considered a legitimate scientific question is the enormous scale of the universe. The Sun is only one star among hundreds of billions in the Milky Way, and the Milky Way itself is only one galaxy among an enormous number of galaxies in the observable universe. Modern observations have also shown that planets are common around other stars. This does not mean that life must exist elsewhere, but it makes Earth's uniqueness a question that can be investigated rather than simply assumed. **(NASA, "Universe of Galaxies"; NASA Exoplanet Exploration)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

The scale of the universe, however, should not be confused with evidence for life. A very large number of stars and planets increases the number of possible environments in which life could potentially arise, but probability alone cannot establish that life has actually emerged elsewhere. Scientists therefore combine astronomical observations with knowledge from biology, chemistry, and planetary science to identify environments where life might be possible. This distinction between the **possibility of life** and **evidence of life** is central to modern astrobiology. **(NASA Astrobiology; National Academies of Sciences, Engineering, and Medicine, 2018)**

The scientific search is consequently not based simply on the idea that "the universe is too large for Earth to be alone." Instead, researchers look for measurable conditions and signals that could distinguish a potentially inhabited environment from an uninhabited one. The question has moved from philosophical speculation toward an evidence-based investigation involving telescopes, spacecraft, laboratory experiments, and increasingly sophisticated models of planetary environments. **(NASA Astrobiology; National Academies of Sciences, Engineering, and Medicine, 2018)**

7.3 What Makes a Planet Potentially Habitable?

The scientific search for life begins with the question of whether an environment can maintain the physical and chemical conditions required for life. For life as we know it, liquid water is one of the most important starting points, which is why astronomers use the concept of the **habitable zone (HZ)**—the region around a star where conditions could allow liquid water to exist on a planet's surface. The location of this region depends primarily on the luminosity of the host star. In a simplified model, the orbital distance of the habitable zone scales approximately as

$$d_h^z \propto \sqrt{L},$$

where d_h^z is the distance from the star and L is its luminosity relative to the Sun. A more complete treatment must also consider atmospheric composition, greenhouse effects, planetary mass, clouds, and stellar activity. Therefore, being inside the habitable zone is a useful screening criterion, not a declaration that a planet is habitable or inhabited. **(NASA, "The Habitable Zone")**

Habitability is consequently a multidimensional problem. Scientists consider factors such as the planet's size and density, atmospheric pressure and composition, availability of volatile compounds, stellar radiation, geological activity, and the long-term stability of its environment. A planet may receive an appropriate amount of energy from its star but still be unsuitable for life if it lacks an atmosphere or loses its water through atmospheric escape. Conversely, environments outside the conventional habitable zone may remain interesting if they contain internal heat or subsurface oceans. This is why icy moons such as Europa are scientifically important even though they do not resemble Earth's surface environment. **(NASA, "The Habitable Zone"; NASA Ocean Worlds)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

The next major question is how scientists can determine the properties of a world that cannot be visited. One of the most powerful techniques is **transmission spectroscopy**. When an exoplanet passes in front of its star, a small fraction of the starlight travels through the planet's atmosphere before reaching a telescope. Molecules absorb particular wavelengths of light, producing characteristic features in the observed spectrum. In simplified terms, astronomers compare the wavelength-dependent transit depth, approximately

$$\delta(\lambda) \approx [R_p(\lambda)/R\bigstar]^2,$$

where $R_p(\lambda)$ is the effective planetary radius at a particular wavelength and $R\bigstar$ is the stellar radius. If the atmosphere absorbs strongly at a particular wavelength, the apparent radius of the planet becomes slightly larger at that wavelength. This allows scientists to infer the presence of molecules such as H_2O, CO_2, CH_4, and other gases from their spectral signatures. **(NASA, "Spectroscopy 101"; NASA, "Reading an Earth-like Exoplanet's Transmission Spectrum")**

This is where the search for life becomes considerably more difficult. A molecule associated with life is not automatically a biosignature, because the same chemical can sometimes be produced through non-biological processes. Oxygen, for example, is strongly associated with life on modern Earth, but scientists have identified possible abiotic pathways that can generate oxygen under certain planetary conditions. Consequently, a convincing detection would require the atmospheric chemistry, planetary environment, stellar activity, and multiple potential biosignatures to be considered together. NASA emphasizes that even detecting a potentially interesting biosignature would not, by itself, constitute a confirmed discovery of life. **(NASA, "Life or Illusion"? Avoiding False Positives"; NASA, "Reconnaissance of Potentially Habitable Worlds with Webb")**

This gives the scientific search a useful hierarchy: **a potentially habitable environment is not evidence of life; a possible biosignature is not automatically proof of life; and a confirmed biological detection would require multiple independent lines of evidence.** The objective is therefore not simply to find another Earth, but to determine whether another world possesses the physical, chemical, and environmental conditions—and ultimately the measurable signatures—that can support the conclusion that life exists beyond Earth. **(NASA Astrobiology; NASA Exoplanet Exploration.)**

7.4 How Scientists Detect Worlds Beyond the Solar System

Before scientists can search for life, they first need to establish that other worlds exist and determine their basic properties. Because exoplanets are extremely distant and usually cannot be seen directly, astronomers primarily detect them through their effects on the light or motion of their host stars. Two of the most important methods are the **transit method** and the **radial-velocity method**. In the transit method, a planet passing in front of its star causes a small, periodic reduction in observed brightness. The approximate transit depth can be expressed as $\delta \approx$

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

$(R_p/R★)^2$, where R_p is the planet's radius and $R★$ is the star's radius. This allows astronomers to estimate the planet's size relative to its star. **(NASA, "Exoplanet Detection"; NASA Exoplanet Exploration)**

The radial-velocity method approaches the problem from the opposite direction. A planet's gravity causes its star to move slightly around their common centre of mass. This movement produces a measurable shift in the star's spectral lines through the **Doppler effect**. The approximate relation **$\Delta\lambda/\lambda \approx v_r/c$** connects the observed wavelength shift with the star's radial velocity, where v_r is the velocity toward or away from the observer and c is the speed of light. By repeatedly measuring these changes, astronomers can infer the presence of an orbiting planet and estimate properties such as its orbital period and minimum mass. **(NASA, "Exoplanet Detection: Radial Velocity Method")**

These methods are important because they transform an otherwise invisible object into a measurable scientific system. Once a planet's orbit, approximate size, mass, and stellar environment are known, researchers can begin asking more meaningful questions about its composition and habitability. Transit observations can also be combined with spectroscopy to study atmospheres, allowing scientists to investigate whether gases such as water vapour, carbon dioxide, methane, or other molecules are present. **(NASA, "Can We Find Life?")**

The limitations are equally important. A detected planet is not necessarily Earth-like, and even a planet located within its star habitable zone is not automatically suitable for life. Stellar activity, atmospheric loss, clouds, surface conditions, and planetary history can fundamentally change its environment. For this reason, modern exoplanet research increasingly focuses not merely on discovering planets, but on **characterizing them**—turning the question from "Does this world exist?" into "What kind of world is it, and could its environment support life?" **(NASA, "The Big Questions"; NASA Exoplanet Exploration)**

7.5. Biosignatures: What Would Count as Evidence of Life?

Finding a potentially habitable planet is only the first step. The more difficult question is whether scientists can identify a measurable feature that is actually produced by life. Such evidence is called a **biosignature**—a chemical, physical, or geological feature that could indicate present or past biological activity. Possible examples include atmospheric combinations of gases, certain mineral structures, or chemical patterns that are difficult to explain through non-biological processes alone. NASA emphasizes that no single biosignature should automatically be interpreted as proof of life; the surrounding planetary environment must also be considered. **(NASA, "What Is a Biosignature?"; NASA, "Ladder of Life Detection")**

One of the most important approaches is atmospheric spectroscopy. When starlight passes through an exoplanet atmosphere, different molecules absorb specific wavelengths, producing

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

characteristic features in the spectrum. Scientists can therefore search for combinations such as water vapour, oxygen, ozone, methane, carbon dioxide, and other molecules. The important point is not simply detecting one gas but determining whether the observed chemical combination is difficult to maintain without a biological source. **(NASA, "How We Find and Characterize"; NASA, "Why We Search")**

This creates a major scientific problem known as **false positives**. Oxygen, for example, is strongly associated with life on present-day Earth, but certain non-biological processes can also produce oxygen under particular planetary conditions. Similarly, methane can have biological origins but can also be generated through geological or chemical processes. Scientists must therefore consider the planet's atmosphere, surface, star, radiation environment, and possible geological activity together before interpreting a chemical signal as evidence for life. **(NASA, "Life or Illusion"? Avoiding False Positives")**

The challenge becomes even greater for small rocky planets. Their atmospheres produce extremely weak signals, and clouds, stellar activity, and overlapping molecular absorption can make interpretation difficult. NASA notes that even for promising targets, detecting possible biosignatures may require many observations and extensive atmospheric modelling. A single intriguing molecule would therefore be a reason for further investigation, not an immediate declaration that life has been discovered. **(NASA, "Reconnaissance of Potentially Habitable Worlds with Webb")**

This is why modern life-detection research increasingly follows a **multiple-lines-of-evidence** approach. The stronger the evidence becomes across independent observations and different types of measurements, the more confident scientists can distinguish biological activity from an unusual but entirely natural process. In other words, the scientific goal is not simply to find something interesting in an exoplanet's spectrum, but to build a case that survives alternative explanations. **(NASA, "Ladder of Life Detection").**

7.6. The Most Promising Targets in the Search for Life

Scientists do not search for extraterrestrial life randomly. Certain planets and moons are considered more promising because their physical and chemical environments provide conditions that could potentially support life. One of the most important examples is **K2-18 b**, a planet orbiting within the habitable zone of its star. Observations with the James Webb Space Telescope have identified carbon dioxide and methane in its atmosphere, making it an important target for further atmospheric studies. However, these observations do not constitute evidence that life exists there; the interpretation of possible biosignatures remains an active scientific question. **(NASA, "K2-18 b"; Madhusudhan et al., 2023)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

Another important target is the **TRAPPIST-1 system**, which contains seven approximately Earth-sized planets orbiting a small red dwarf star. Several of these planets receive levels of stellar radiation that make them valuable for studies of atmospheric composition and potential habitability. Their close proximity to their host star also makes the system particularly useful for atmospheric observations, although stellar activity and atmospheric loss remain in important uncertainties. **(NASA Exoplanet Exploration; Gillon et al., 2017)**

The search is not limited to planets outside the Solar System. **Europa**, one of Jupiter's largest moons, is considered a major Astro biological target because strong evidence indicates the presence of a salty ocean beneath its icy surface. Similarly, **Enceladus**, a moon of Saturn, releases plumes containing water vapor and other materials from its subsurface ocean into space. These worlds demonstrate an important principle in astrobiology: potentially habitable environments do not necessarily need Earth-like surfaces; life could theoretically exist in environments where liquid water is maintained beneath an icy exterior. **(NASA, "Europa Clipper"; NASA, "Enceladus")**

These examples also demonstrate why scientific search for life is more complicated than simply finding an Earth-like planet. K2-18 b provides an opportunity to study an exoplanetary atmosphere, TRAPPIST-1 provides several Earth-sized worlds within one planetary system, while Europa and Enceladus offer nearby environments where liquid water may exist beneath ice. None has yet provided confirmed evidence of extraterrestrial life, but each represents a different scientific pathway through which the question can be investigated. **(NASA Astrobiology; NASA Exoplanet Exploration)**

7.7. Searching for Intelligent Life: SETI and Techno-signatures

The search for extraterrestrial life is not limited to microorganisms or atmospheric chemistry. If an intelligent civilization exists elsewhere, it might leave detectable technological traces known as **techno signatures**. These could include narrow-band radio signals, highly focused laser pulses, unusual atmospheric pollutants, or large artificial structures that alter the light or infrared emission of their host star. This expands the scientific search from the question "Does life exist?" to the more specific question "Could an advanced civilization produce a signal or physical signature that we can detect?" **(NASA, "Searching for Signs of Intelligent Life: Techno signatures")**

Radio astronomy has historically been one of the most important approaches because radio waves can travel enormous interstellar distances and can carry highly structured information. A potential artificial signal would not simply be "a strange radio wave"; researchers would look for characteristics such as a narrow bandwidth, repetition, unusual modulation, or a source that remains associated with a particular astronomical position. Optical SETI provides another possibility by searching for extremely short, powerful laser pulses that could be intentionally

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

transmitted across interstellar distances. **(NASA, "Techno signatures"; NASA Technical Reports Server)**

Techno signatures can also be searched indirectly. For example, an advanced civilization might produce industrial chemicals in an atmosphere that would be difficult to generate naturally or construct enormous energy-collecting structures that produce unusual infrared or light signatures. These possibilities remain hypothetical, but they demonstrate that SETI is no longer restricted to simply listening to radio messages. Modern techno signature research considers radio, optical, infrared, atmospheric, and other potentially measurable signatures. **(NASA, "Techno signatures"; NASA Exoplanet Exploration Program)**

Have scientists detected an extraterrestrial technological civilization yet? No confirmed techno signature has been established so far. This negative result is scientifically important: the absence of a confirmed signal does not demonstrate that intelligent life does not exist, because searches cover only certain frequencies, directions, time periods, signal strengths, and technological assumptions. A civilization may also communicate using methods we have not considered or may not be transmitting at all. The scientific conclusion therefore remains cautious: intelligent extraterrestrial life is a possibility under investigation, not an established observation. **(NASA, "What Are Techno signatures?"; NASA, "Are We Alone in the Universe?")**

7.8. The Drake Equation and the Probability of Intelligent Life

The scientific question of intelligent extraterrestrial life can also be approached through the **Drake Equation**, proposed by astronomer Frank Drake in 1961. The equation does not calculate the actual number of extraterrestrial civilizations with certainty; instead, it provides a framework for identifying the different factors that would determine how many technologically communicating civilizations might exist in the Milky Way. It is commonly written as:

$$\mathbf{N = R\bigstar \times f_p \times n_e \times f_l \times f_i \times fc \times l}$$

Here, N represents the number of detectable civilizations in the Milky Way; $R\bigstar$ is the rate of star formation; f_p is the fraction of stars with planets; n_e is the average number of potentially suitable planets per planetary system; f_l represents the fraction on which life develops; f_i the fraction on which intelligent life develops; fc the fraction that develops detectable communication technology; and L the length of time such civilizations remain detectable. **(Drake, 1961; National Academies of Sciences, Engineering, and Medicine, 2018)**

What makes the equation scientifically interesting is that several of its early astronomical terms are now better constrained than they were when Drake proposed it. Thousands of exoplanets have been confirmed, and observations indicate that planets are common around stars. However,

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

the biological terms—particularly the probability that life begins, develops intelligence, and produces detectable technology—remain highly uncertain because Earth is currently the only known example of life. As a result, the equation should not be treated as a machine that produces a reliable numerical answer. Its real value is that it separates what science can increasingly measure from what remains unknown. **(NASA Exoplanet Exploration; National Academies of Sciences, Engineering, and Medicine, 2018)**

This uncertainty is important for the present research. The existence of billions of potentially relevant astronomical environments does not automatically imply that intelligent civilizations exist, because biological probabilities may be extremely small. Conversely, the fact that humanity has detected no confirmed civilization does not demonstrate that intelligent life is absent. The Drake Equation therefore represents a scientifically disciplined way of expressing uncertainty rather than proof either for or against extraterrestrial intelligence. **(Drake, 1961; National Academies of Sciences, Engineering, and Medicine, 2018)**

7.9. The Fermi Paradox: If Life Is Possible, Where Is Everyone?

The possibility of numerous habitable environments leads to a deeper question known as the **Fermi Paradox**: if intelligent extraterrestrial civilizations are possible and the universe contains so many stars and planets, why have we not detected clear evidence of any of them? The paradox is associated with physicist Enrico Fermi and highlights the apparent tension between the enormous number of possible environments for life and the complete absence of a confirmed extraterrestrial civilization. It is not mathematical proof that aliens do not exist; rather, it identifies a gap between what might be statistically possible and what has been observed.

Several explanations have been proposed. Intelligent life may be extremely rare, technological civilizations may not survive for very long, civilizations may exist too far away for meaningful communication, or they may use communication methods that current searches cannot detect. Another possibility is that life may be relatively common while technological intelligence is exceptionally uncommon. These possibilities demonstrate that the existence of habitable planets does not automatically lead to the existence of detectable civilizations. **(National Academies of Sciences, Engineering, and Medicine, 2018; NASA Astrobiology)**

The Fermi Paradox also exposes an important limitation in arguments based purely on the size of the universe. A vast universe provides an enormous number of opportunities for life, but opportunity is not evidence of occurrence. Between the formation of a habitable environment and the emergence of a civilization capable of communicating across interstellar distances lie many uncertain biological and technological steps. The absence of a confirmed signal therefore remains an important scientific observation, even though it cannot be interpreted as proof that humanity is alone. **(Frank et al., 2018; National Academies of Sciences, Engineering, and Medicine, 2018)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

7.10. Have We Found Evidence of Extraterrestrial Life?

Despite decades of astronomical observation, planetary exploration, and dedicated searches for life, there is currently no scientifically confirmed evidence of extraterrestrial life. No microorganism, extraterrestrial organism, or technological civilization has been independently verified outside Earth. This is an important distinction because science has identified many environments that could potentially support life, but a potentially habitable environment is not the same thing as an inhabited environment. **(NASA Astrobiology; NASA Exoplanet Exploration)**

Several discoveries have nevertheless made the search scientifically compelling. Thousands of exoplanets have been confirmed, including rocky worlds and planets located within the habitable zones of their stars. Within our own Solar System, Europa and Enceladus provide evidence for subsurface oceans, while Mars preserves geological evidence that liquid water existed on its surface in the past. These discoveries demonstrate that environments relevant to life may be more widespread than previously assumed, although none of them has produced confirmed evidence of life itself. **(NASA Exoplanet Exploration; NASA Europa Clipper; NASA Mars Exploration; NASA Enceladus)**

One of the most important developments is the ability to study exoplanet atmospheres using spectroscopy. Observatories such as the James Webb Space Telescope can analyse how atmospheric molecules interact with light, allowing scientists to investigate gases such as water vapor, carbon dioxide, methane, and other compounds. However, even a potentially interesting combination of gases would require extensive investigation because biological and geological processes can sometimes produce similar signatures. A genuine discovery would therefore require multiple independent observations and the elimination of credible non-biological explanations. **(NASA, "Ladder of Life Detection"; NASA Webb Mission)**

The scientific position is therefore deliberately cautious: **extraterrestrial life is scientifically plausible, but it has not yet been demonstrated.** This distinction is central to the entire research question. The existence of billions of stars and thousands of known planets makes the possibility worth investigating, but probability, habitability, and biosignatures cannot be treated as equivalent to direct detection. Until independent evidence demonstrates otherwise, Earth remains the only confirmed example of a living world. **(NASA Astrobiology; National Academies of Sciences, Engineering, and Medicine, 2018)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

8. Final Comparative Analysis

➢ What Does the Evidence Actually Tell Us?

The evidence examined throughout this research does not lead to a simple conclusion that extraterrestrial life either definitely exists or is ruled out by religious tradition. Instead, it reveals two different but overlapping approaches to the same fundamental question: whether humanity represents the entirety of life and creation. Religious sources approach this question primarily through theology, cosmology, and descriptions of creation, while modern science approaches it through observation, measurement, experimentation, and testable evidence. The distinction between these approaches is essential when evaluating their respective contributions.

The Qur'an and Biblical traditions generally present humanity as part of a much larger created order, but they do not provide an unambiguous scientific description of extraterrestrial biological life. Sunni Hadith literature contains more specific cosmological references, particularly concerning the seven Earths and the wider created order. Some Shia traditions go further by describing multiple worlds and inhabitants apparently independent of Adamic humanity. However, the reliability and interpretation of these reports vary, meaning that they cannot all be treated as equally authoritative evidence. **(Qur'an 65:12; Genesis 1:1–25; Sahih al-Bukhari, 3198; al-Saduq, *al-Khiṣāl*, Vol. 1, Chapters 3 and 9; al-Kulayni, *al-Kafi*, Vol. 8, Chapter 301)**

Modern science approaches the question from a fundamentally different direction. The discovery of thousands of exoplanets, potentially habitable environments within and beyond the Solar System, and increasingly sophisticated methods for analysing planetary atmospheres have established that the search for life beyond Earth is scientifically reasonable. Yet no extraterrestrial organism or technological civilization has been confirmed. Habitability, biosignatures, and statistical probability can make extraterrestrial life plausible, but none of these alone constitutes direct detection. **(NASA Astrobiology; NASA Exoplanet Exploration; National Academies of Sciences, Engineering, and Medicine, 2018)**

The strongest conclusion, therefore, lies between two extremes. It would be scientifically unjustified to claim that ancient religious texts have already proven the existence of extraterrestrial life. It would also be historically inaccurate to claim that religious traditions uniformly reject the possibility of life or creation beyond humanity. The evidence instead shows that several Islamic traditions, particularly some Shia reports, preserve remarkably expansive ideas about multiple worlds and forms of creation, while modern science provides an independent framework for investigating whether such life exists. The two bodies of evidence can meaningfully be compared, but they should not be treated as interchangeable forms of proof. **(al-Saduq, *al-Khiṣāl*; al-Kulayni, *al-Kafi*; NASA Astrobiology)**

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

What Have We Actually Learned?

After examining the Qur'an, Biblical traditions, Psalms, Sunni Hadith, Shia Hadith, and modern scientific research, the evidence does not give us a simple "yes" or "no" answer to the existence of extraterrestrial life. Instead, it reveals something more interesting. Different traditions have, in their own ways, considered the possibility that creation is much larger than the human world. Some texts speak generally about the heavens and the vastness of creation, while certain Islamic traditions go further and describe multiple Earths, worlds, or forms of creation. Modern science approaches the same broad question from a completely different direction: through telescopes, spacecraft, spectroscopy, planetary science, and the search for biosignatures.

The important point is that these sources should not be forced to say the same thing. A religious text and a scientific observation answer different kinds of questions. Religion may ask what creation means and what place humanity occupies within it, while science asks what physical objects and forms of life can actually be detected. Recognizing this difference makes the comparison stronger, not weaker.

Do the Religious Sources Support the Possibility of Life Beyond Earth?

They can provide a conceptual basis for considering the possibility, but they do not provide scientific confirmation of it. The Qur'an refers to the creation of the seven heavens and "of the Earth, the like of them," while Sunni Hadith literature contains references to seven Earths and the wider created order. Some Shia traditions are considerably more explicit, describing thousands of worlds, millions of worlds and Adams, and inhabited regions whose creatures are described as independent of Adamic humanity. **(Qur'an 65:12; Sahih al-Bukhari, 3198; al-Saduq, *al-Khiṣāl*, Vol. 1, Chapters 3 and 9; al-Kulayni, *al-Kafi*, Vol. 8, Chapter 301)**

But what does "support" actually mean here? It does not mean that these texts prove that an exoplanet contains life. Rather, they show that the idea of creation extending beyond humanity is present within parts of Islamic intellectual tradition. That is an important historical finding in itself. It becomes even more interesting when considered alongside modern science, which now has the technological ability to investigate whether other worlds actually contain life.

Is the Shia Material Stronger Than the Sunni Material?

In terms of explicit descriptions of multiple inhabited worlds, some Shia traditions examined in this research are certainly more direct. The reports concerning twelve thousand worlds, one million worlds and one million Adams, and the thirty-nine white lands contain language that is particularly relevant to the question of life beyond Earth. However, "more explicit" does not automatically mean "more authentic." Some of these reports have disputed or incomplete chains,

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

and their scholarly evaluation varies. **(al-Saduq, *al-Khiṣāl*, Vol. 1, Chapters 3 and 9; al-Kulayni, *al-Kafi*, Vol. 8, Chapter 301)**

Sunni material presents a different evidentiary pattern. The reference to seven Earths is found in *Sahih al-Bukhari*, giving that concept a stronger position within Sunni Hadith literature. However, the more detailed report attributed to Ibn ʿAbbas (may Allah be pleased with him), which describes analogous creations on the seven Earths, is not a direct Prophetic Hadith and has been subject to scholarly criticism. **(Sahih al-Bukhari, 3198; al-Hakim, *al-Mustadrak*, 3822; al-Bayhaqi, *al-Asmaʾ wa al-Sifat*)**

Therefore, the fairest conclusion is not that one tradition "proves aliens" more than the other. Rather, Sunni and Shia sources preserve **different levels and forms of cosmological speculation**, and each report has to be judged according to its own textual and transmission history.

Could These Ancient Descriptions Be Referring to Modern Planets?

This is perhaps the most tempting question—and also one of the easiest places to overinterpret the evidence. A "world" in an ancient text might sound similar to what we now call a planet, but the similarity of language does not establish identity. Ancient religious texts were written within very different cosmological frameworks and did not use concepts such as exoplanets, stellar systems, or atmospheric spectroscopy.

Therefore, it would be too strong to say that a reference to "another world" necessarily means an exoplanet. At the same time, it would be equally simplistic to dismiss the concept merely because the original terminology is not scientific. The appropriate approach is to preserve the original meaning and then ask whether the idea has a meaningful modern parallel. In this sense, the comparison is valuable—but it should remain in a comparison, not a claim of scientific prediction.

What Does Modern Science Actually Tell Us?

Modern science has established something that ancient observers could not directly determine planets are not unique to our Solar System. Thousands of exoplanets have now been confirmed, and astronomers can measure their sizes, orbital periods, masses, and in some cases aspects of their atmospheres. Scientists have also identified potentially interesting environments within our own Solar System, including Europa and Enceladus, where evidence points toward subsurface oceans. **(NASA Exoplanet Exploration; NASA Europa Clipper; NASA Enceladus)**

Does that mean extraterrestrial life has been found? No. This distinction is extremely important. A planet may be in a habitable zone without containing life. An atmosphere may contain

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

interesting molecules without those molecules being produced biologically. Even a possible biosignature requires careful investigation, and alternative explanations must be ruled out. At present, Earth remains the only confirmed world known to contain life. **(NASA Astrobiology; NASA, "Ladder of Life Detection")**

What Happens If We Eventually Discover Life?

A confirmed discovery would be scientifically extraordinary, but its importance would go beyond science. If even microbial life were independently discovered in another world, humanity would immediately have evidence that life is not unique to Earth. The implications would extend into biology, philosophy, theology, and our understanding of humanity's place in the universe.

The discovery of intelligent life would raise an even larger set of questions. How did civilization develop? How long has it been? Does it have its own understanding of the universe? Could communication be possible? And, perhaps most importantly, for this research, how would different religious traditions interpret the existence of another intelligent creation? These questions cannot be answered in advance, but the religious material examined here provides an interesting historical background for thinking about them.

What If We Never Find Extraterrestrial Life?

The opposite possibility is equally important. Humanity may continue searching for decades without finding convincing evidence of life beyond Earth. That outcome would not prove that Earth is the only place where life exists; it would simply show that detectable life may be extremely rare, distant, short-lived, or fundamentally different from what current scientific methods are designed to detect.

This is one reason the absence of evidence must be handled carefully. "We have not found extraterrestrial life" and "extraterrestrial life does not exist" are two very different statements. Modern science currently supports the first, not the second. The same intellectual caution should be applied to religious sources: the absence of an explicit statement about extraterrestrial organisms cannot automatically be turned into a theological rejection of the possibility.

Where Does the Religious Evidence End and Science Begin?

This is probably the most important methodological lesson of the entire research. Religious texts can be examined as historical and theological evidence for how people understood creation. Science, however, requires observable and testable evidence. A Hadith describing another world cannot substitute for a telescope detecting a planet, and the discovery of an exoplanet cannot by itself prove the theological interpretation of an ancient text.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

The two approaches can still be placed in dialogue. Religious traditions can raise philosophical questions about the nature and extent of creation, while science can investigate the physical universe in which those questions arise. Keeping these roles separate prevents both religious overinterpretation and scientific overreach.

So, Is Extraterrestrial Life Possible?

Based on current science, yes—it is a legitimate possibility, but it remains unconfirmed. The universe contains an enormous number of stars and planetary systems, and scientists have identified environments that could potentially support life. Yet no independent extraterrestrial organism or civilization has been confirmed. **(NASA Astrobiology; NASA Exoplanet Exploration)**

From the religious material examined in this research, the answer is similarly nuanced. The sources do not provide a universal, explicit doctrine that extraterrestrial biological life definitely exists. However, several Islamic traditions—especially certain Shia reports—describe creation in ways that leave considerable conceptual space for worlds and forms of existence beyond humanity. The Qur'an and broader Islamic cosmological tradition also present creation as much larger than the immediate human environment. **(Qur'an 65:12; Sahih al-Bukhari, 3198; al-Saduq, *al-Khiṣāl*, Vol. 1, Chapters 3 and 9)**

The Final Assessment

The strongest conclusion of this research is therefore a balanced one. Religious sources do not provide scientific proof of extraterrestrial life, and modern science has not yet confirmed that such life exists. However, the two fields meet at an important intellectual question: **Is humanity the only form of life within the vastness of creation?**

The answer remains unknown. What can be said with greater confidence is that humanity has been asking versions of this question for centuries, long before modern telescopes and space missions existed. Islamic, Jewish, and Christian traditions developed different understandings of the heavens and creation, while modern science has transformed the question into something that can increasingly be investigated through observation. The remarkable part is not that ancient texts can simply be turned into modern science, but that the underlying question—whether creation extends beyond the world known to us—continues to remain relevant.

Final Conclusion

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

This research began with a simple but profound question: **Could life exist beyond Earth, and what do religious traditions tell us about that possibility?** After examining religious texts and Hadith literature alongside modern scientific research, the answer is not a simple confirmation or rejection. Instead, the evidence reveals a much more interesting picture.

Religious traditions generally place humanity within a creation far greater than the human world itself. The Qur'an describes the heavens and Earth as part of a larger created order, Biblical and Psalmic traditions repeatedly direct attention toward the vastness of the heavens, and Sunni Hadith literature contains references to multiple Earths and the wider structure of creation. Some Shia traditions go further, describing multiple worlds, distinct creations, and inhabitants apparently separate from Adamic humanity. **(Qur'an 65:12; Genesis 1:1–25; Psalm 19:1–6; Sahih al-Bukhari, 3198; al-Saduq, *al-Khiṣāl*, Vol. 1, Chapters 3 and 9; al-Kulayni, *al-Kafi*, Vol. 8, Chapter 301)**

Yet intellectual honesty requires an important qualification: these traditions cannot be presented as scientific discoveries of extraterrestrial life. Some Hadith reports have disputed chains, some have multiple interpretations, and ancient cosmological terms cannot automatically be translated into modern astronomical categories. Their value lies primarily in showing how different religious traditions have understood the extent of creation and whether humanity necessarily represents its entire scope.

Modern science has brought the question into a completely new era. We now know that planets exist beyond the Solar System, that potentially habitable environments exist, and that scientists can study the atmospheres of distant worlds. Nevertheless, despite these advances, no extraterrestrial life has yet been scientifically confirmed. The search continues through exoplanet observations, planetary missions, atmospheric spectroscopy, biosignature research, and searches for techno signatures. **(NASA Exoplanet Exploration; NASA Astrobiology; National Academies of Sciences, Engineering, and Medicine, 2018)**

So, does science currently say that we are alone? **No.** Does science say that extraterrestrial life definitely exists? **Also no.** The scientifically responsible position is that the question remains open.

And do religious sources prove that extraterrestrial life exists? **No—not in the scientific sense.** But do some of them provide surprisingly broad concepts of multiple worlds and forms of creation beyond humanity? **Yes.** That distinction is where the most meaningful conclusion of this research lies. What began as a question about ancient religious descriptions ultimately leads back to the same human curiosity that has driven astronomy for centuries: **Are we alone?** At present, we do not know. But for the first time in human history, we possess scientific instruments capable of seriously searching for an answer. And perhaps that is the most significant conclusion of all:

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved

The question of life beyond Earth is no longer only a matter of imagination—it has become an active scientific investigation.

REFERENCES

1) The Qur’an. Surah At-Talaq 65:12. 2) The Qur’an. Surah Ash-Shura 42:29. 3) The Qur’an. Surah Al-Ambiya 21:30. 4) The Qur’an. Surah Al-Fatihah 1:2. 5) al-Bukhari, Muhammad ibn Isma'il. Sahih al-Bukhari. Book of the Beginning of Creation, Hadith 3198. 6) Muslim ibn al-Hajjaj. Sahih Muslim. Relevant traditions concerning creation, heavens, and the wider created order. 7) al-Tirmidhi, Muhammad ibn 'Isa. Jami' al-Tirmidhi. Relevant traditions concerning creation, heavens, and divine attributes. 8) al-Hakim al-Naysaburi, Muhammad ibn 'Abdullah. al-Mustadrak 'ala al-Sahihayn. Hadith 3822. 9) al-Bayhaqi, Ahmad ibn al-Husayn. al-Asma' wa al-Sifat. Relevant discussions concerning heavens, Earths, and creation. 10) Ibn Kathir, Isma'il ibn 'Umar. Tafsir al-Qur'an al-'Azim. Commentary on Qur'anic passages concerning creation and the heavens. 11) al-Saduq, Muhammad ibn 'Ali ibn Babawayh. al-Khisal. Vol. 1. Relevant traditions concerning multiple worlds, creations before Adam, and one million worlds and Adams. 12) al-Saduq, Muhammad ibn 'Ali ibn Babawayh. al-Tawhid. Book 2, Chapter 38. Tradition concerning another world, another creation, another Earth, and another heaven. 13) al-Kulayni, Muhammad ibn Ya'qub. al-Kafi. Vol. 1. Traditions concerning divine authority and the continuity of the Imam on Earth. 14) al-Kulayni, Muhammad ibn Ya'qub. al-Kafi. Vol. 2. Traditions concerning the seven heavens and seven Earths. 15) al-Kulayni, Muhammad ibn Ya'qub. al-Kafi. Vol. 3. Traditions concerning the seven heavens, seven Earths, and what exists within and between them. 16) al-Kulayni, Muhammad ibn Ya'qub. al-Kafi. Vol. 8. Traditions concerning the thirty-nine white lands, their inhabitants, and the diversity of created species. 17) al-Majlisi, Muhammad Baqir. Bihar al-Anwar. Relevant discussions concerning cosmology, creation, and transmitted traditions. 18) The Holy Bible. Genesis, Chapters 1–2. 19) The Holy Bible. Psalms, Chapters 8 and 19. 20) The Holy Bible. Job, relevant passages concerning creation and heaven. 21) The Holy Bible. Isaiah, relevant passages concerning creation and the heavens. 22) NASA. “How Many Exoplanets Are There?” NASA Science. 23) NASA. “Exoplanets.” NASA Science. 24) NASA. “The Habitable Zone.” NASA Science. 25) NASA. “Can We Find Life?” NASA Exoplanet Exploration. 26) NASA. “How Do We Find and Characterize Exoplanets?” NASA Exoplanet Exploration. 27) NASA. “Ladder of Life Detection.” NASA Astrobiology. 28) NASA. “Life or Illusion? Avoiding False Positives in the Search for Living Worlds.” NASA Science. 29) NASA. “Searching for Signs of Intelligent Life: Techno signatures.” NASA Science. 30) NASA. “Europa Clipper Mission.” NASA Science. 31) NASA. “Enceladus.” NASA Science. 32) NASA Astrobiology. Research and educational resources concerning the origin, evolution, distribution, and potential existence of life beyond Earth. 33) National Academies of Sciences, Engineering, and Medicine. An Astrobiology Strategy for the Search for Life in the Universe. Washington, DC: The National Academies Press, 2018. 34) Drake, Frank D. “Project Ozma.” Proceedings of the National Academy of Sciences, 1961. 35) Gillon, Michaël, et al. “Seven Temperate Terrestrial Planets Around the Nearby Ultracool Dwarf Star TRAPPIST-1.” Nature 542 (2017): 456–460. 36) Madhusudhan, Nikku, et al. “Carbon-bearing Molecules in a Possible Hycean Atmosphere.” 2023. 37) NASA/JPL-Caltech. “NASA’s Tally of Planets Outside Our Solar System Reaches 6,000.” 2025. 38) NASA. “Reconnaissance of Potentially Habitable Worlds with NASA’s Webb.” NASA Science. 39) NASA. “Spectroscopy 101: Types of Spectra and Spectroscopy.” NASA Science. 40) NASA. “K2-18 b.” NASA Exoplanet Exploration. 41) Frank, Adam, et al. Research concerning the Fermi Paradox, extraterrestrial civilizations, and technological detectability.

© 2026 Ali Asgar Pala & Mustafa Tin | All Rights Reserved